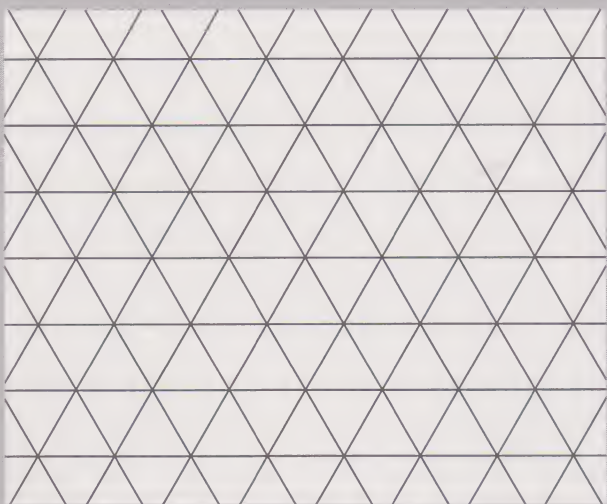


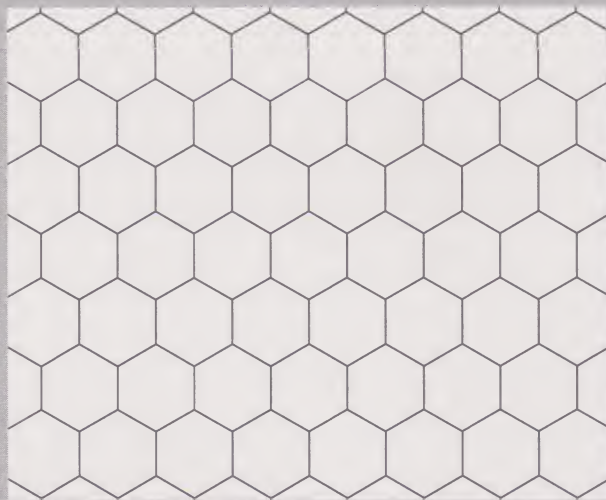
M336 TILING CARD 1 SIDE 1



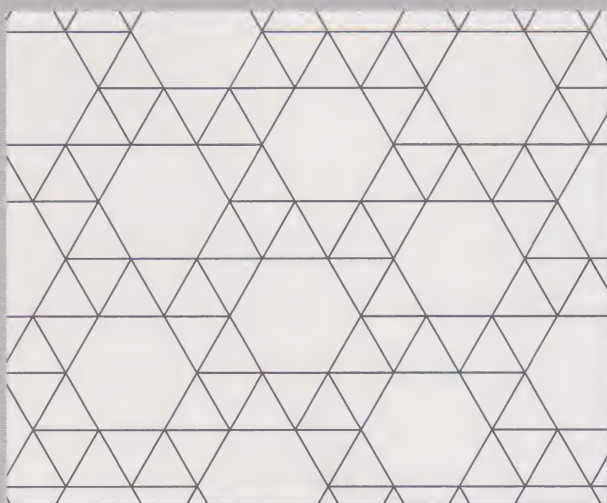
(3,3,3,3,3,3)



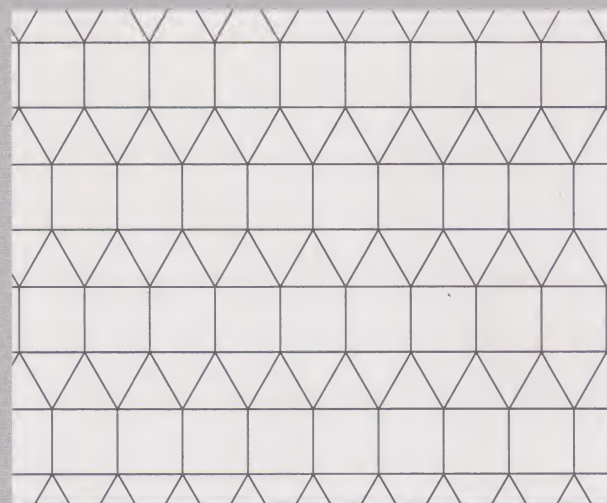
(4,4,4,4)



(6,6,6)

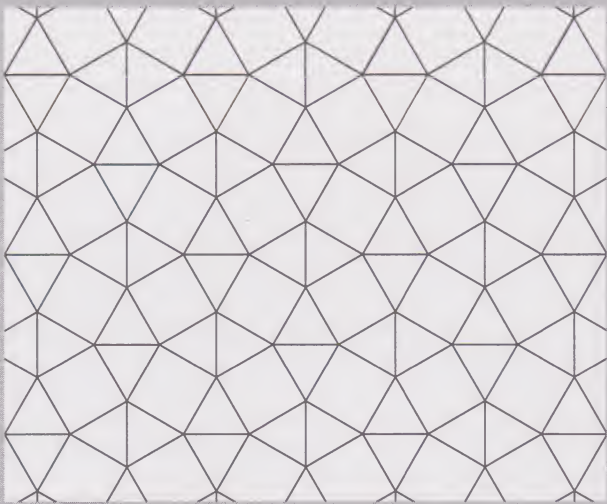


(3,3,3,3,6)

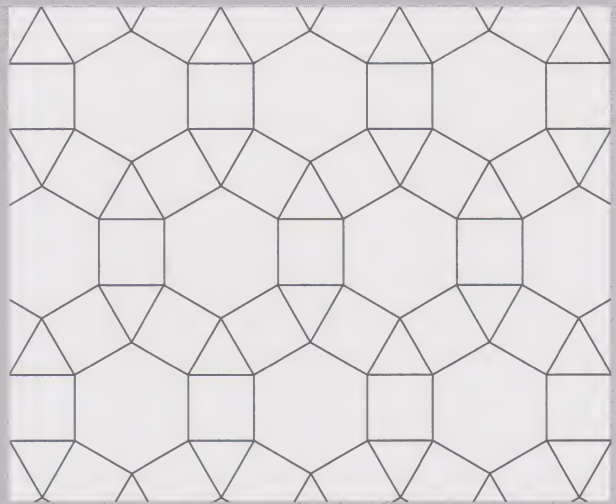


(3,3,3,4,4)

M336 TILING CARD 1 SIDE 2



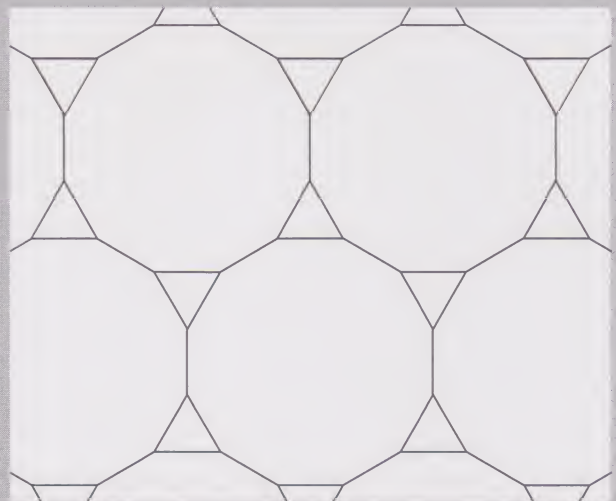
(3,3,4,3,4)



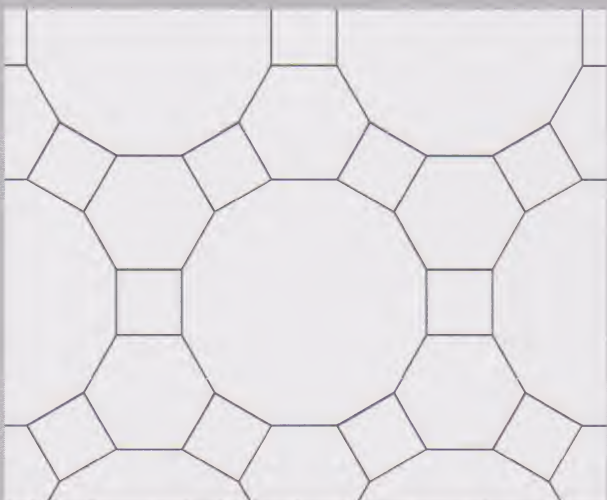
(3,4,6,4)



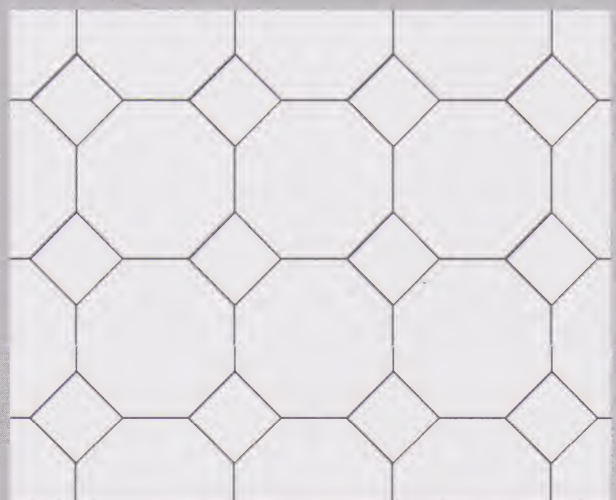
(3,6,3,6)



(3,12,12)

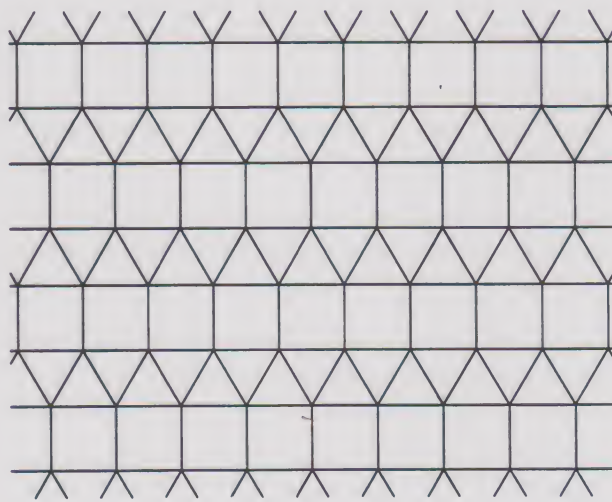
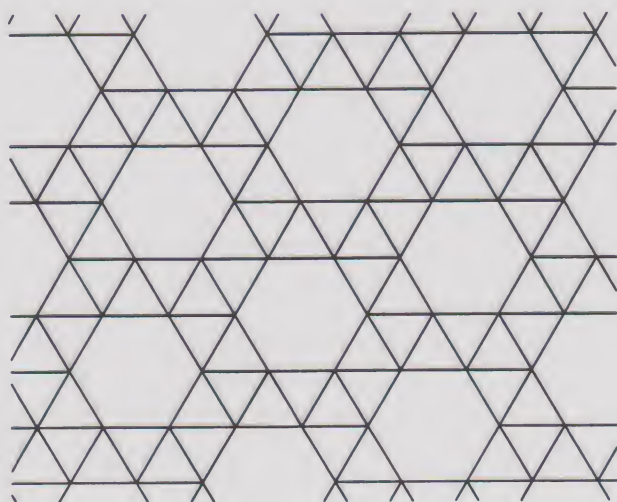
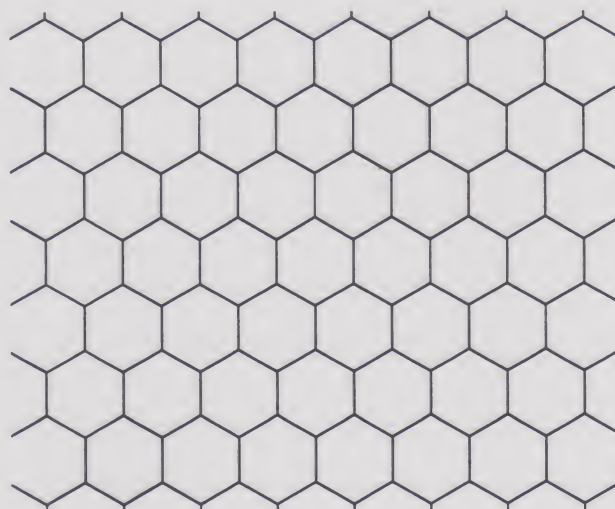
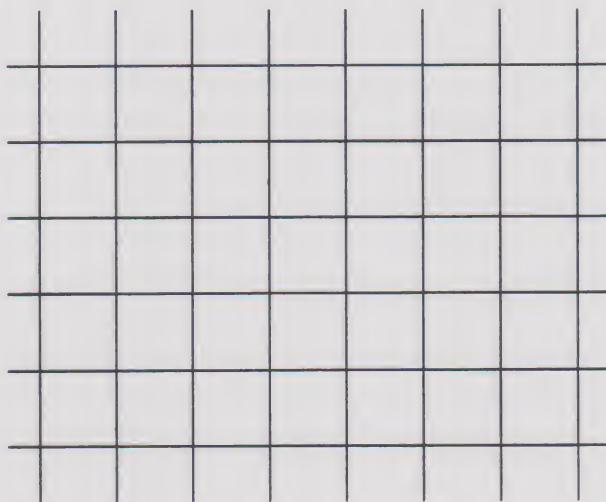
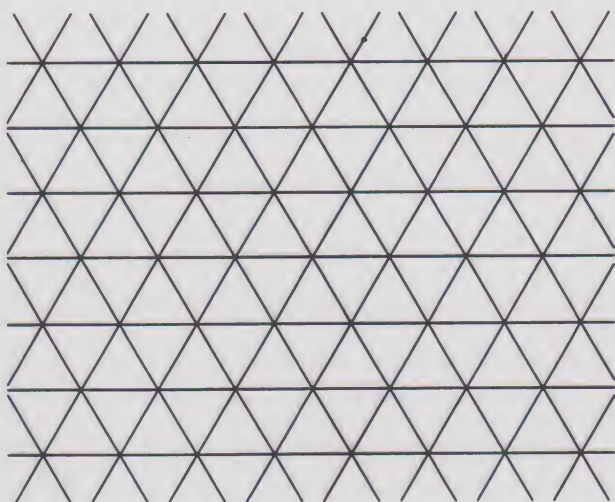


(4,6,12)

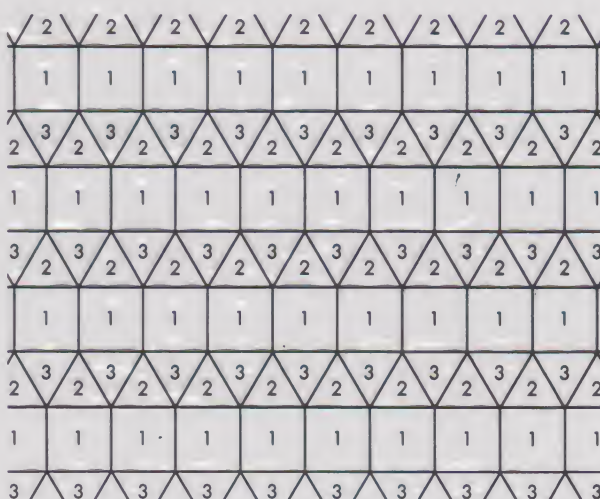
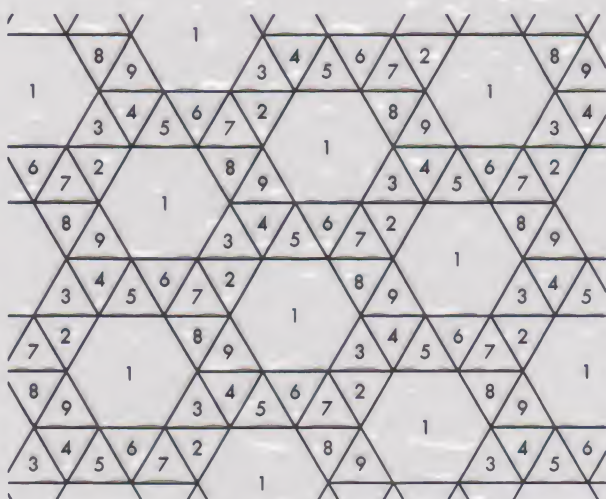
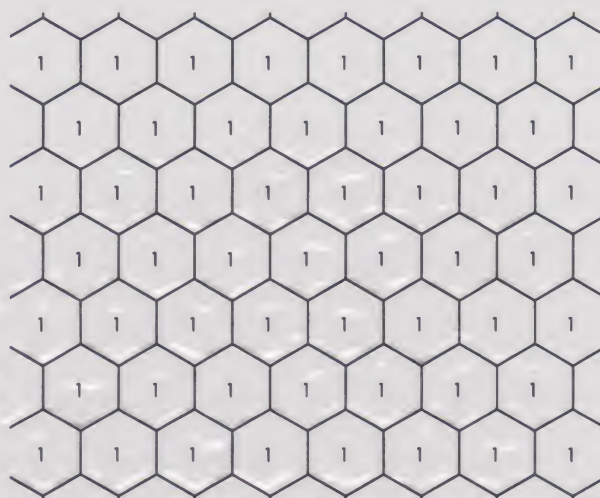
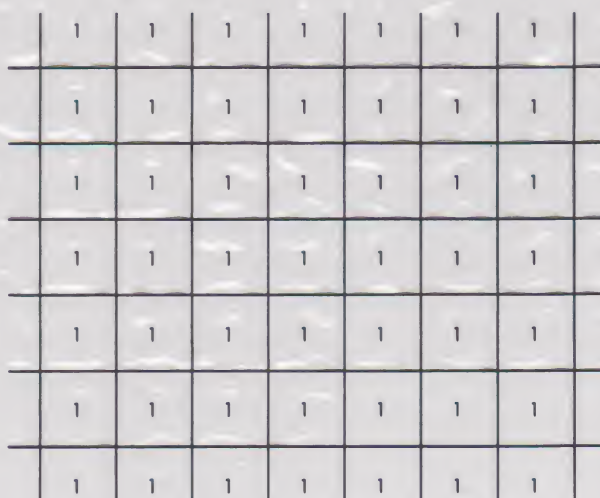
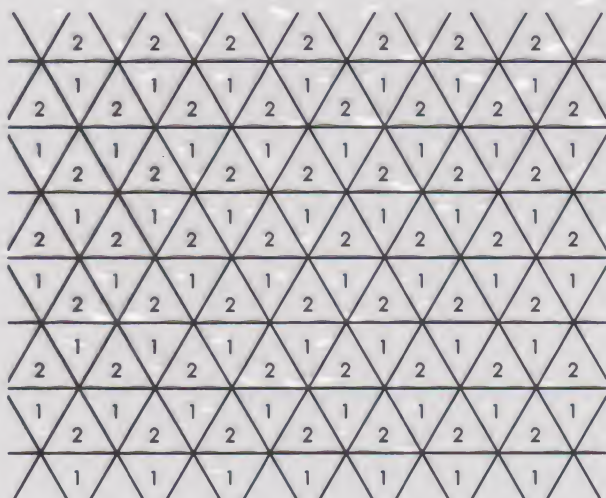


(4,8,8)

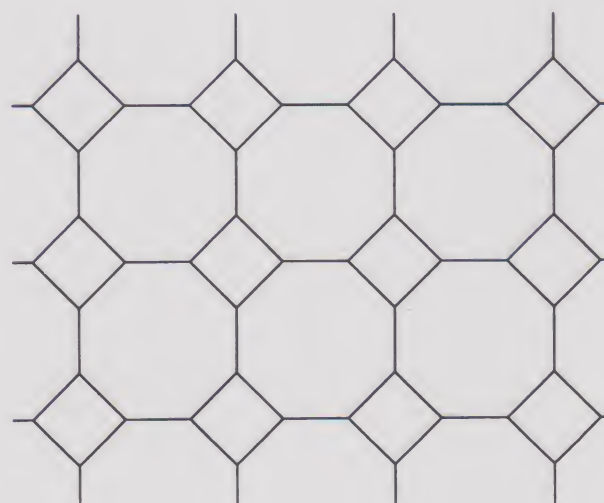
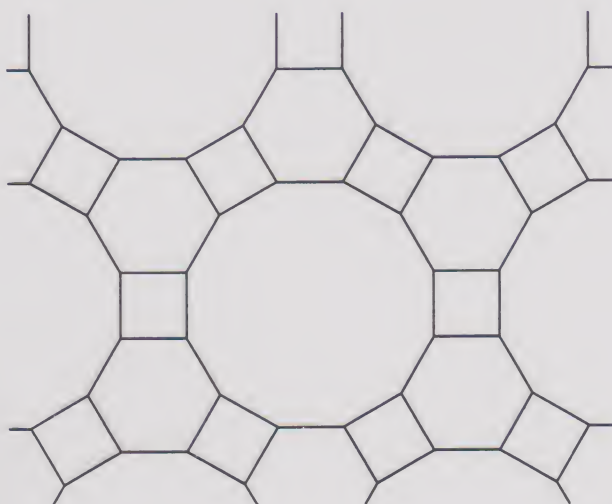
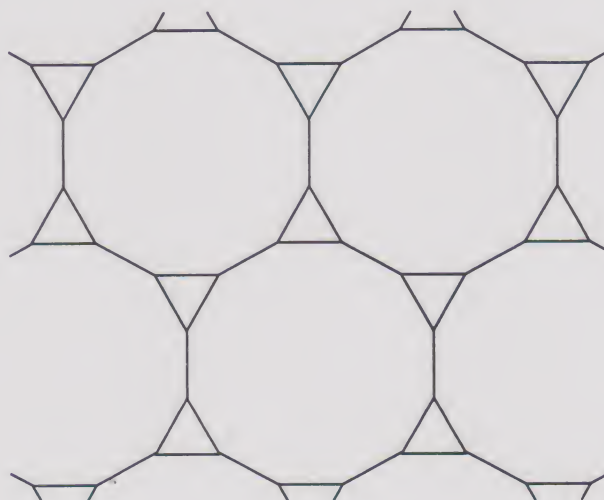
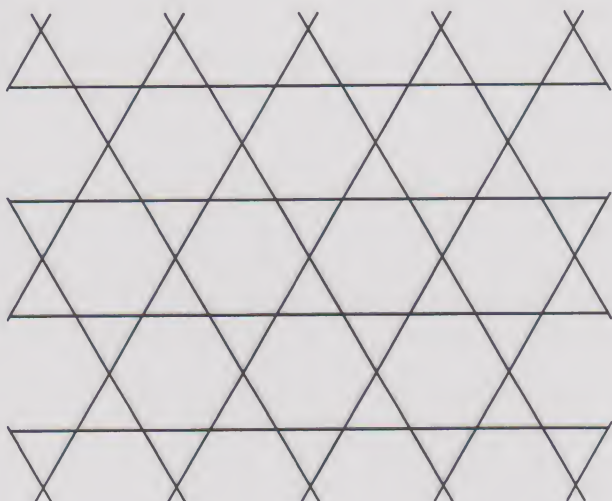
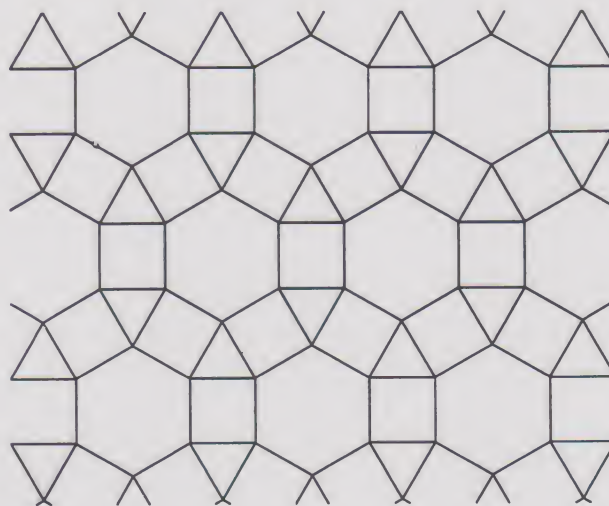
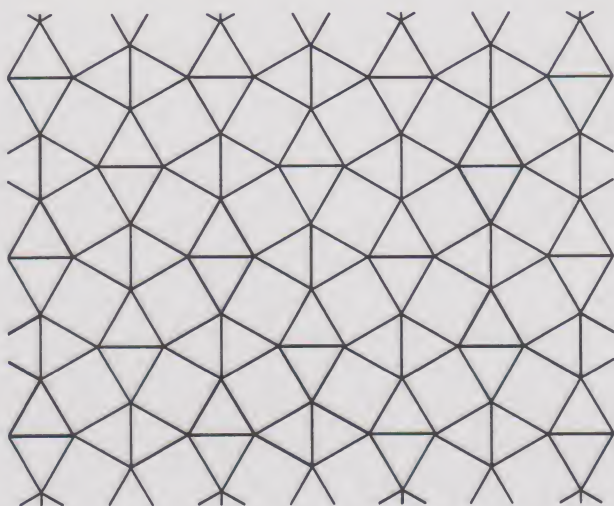
M336 TILING CARD 1 SIDE 1 OVERLAY 1



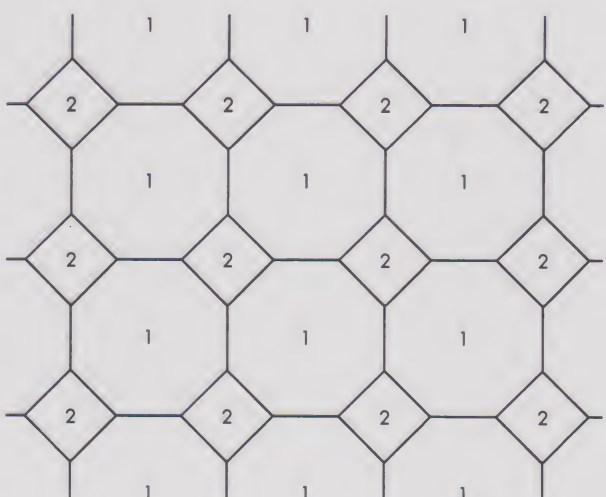
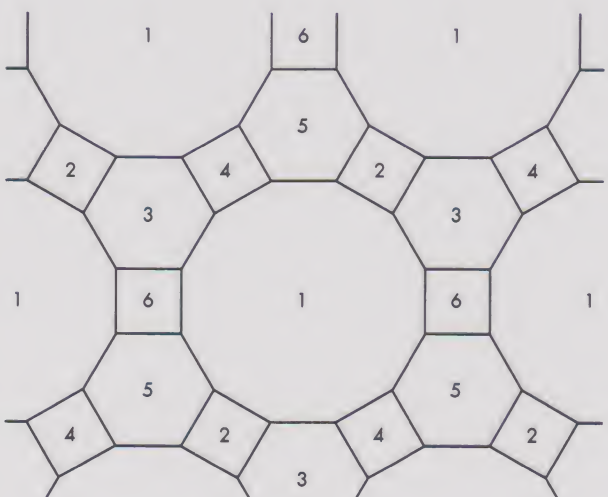
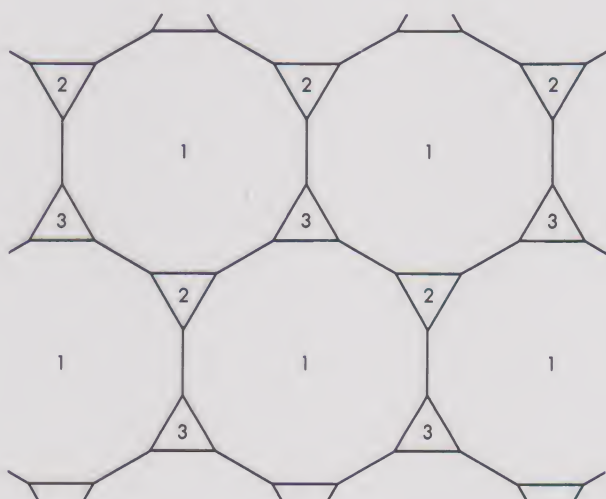
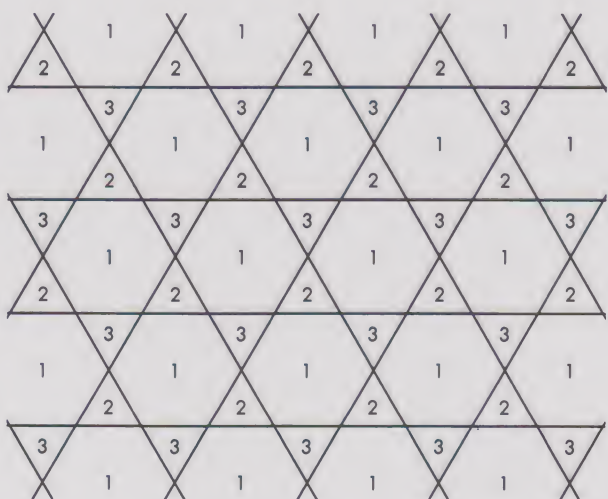
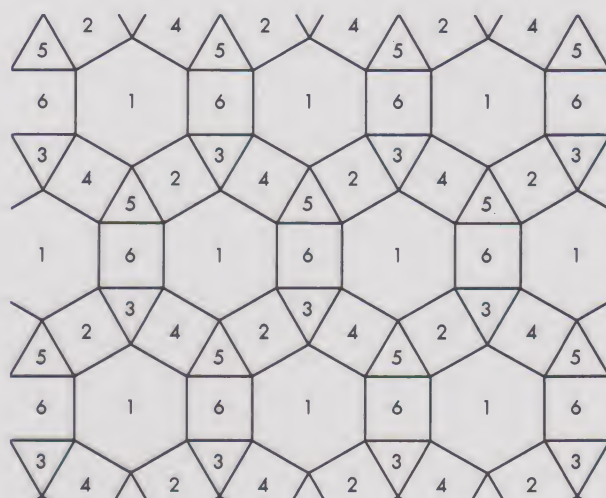
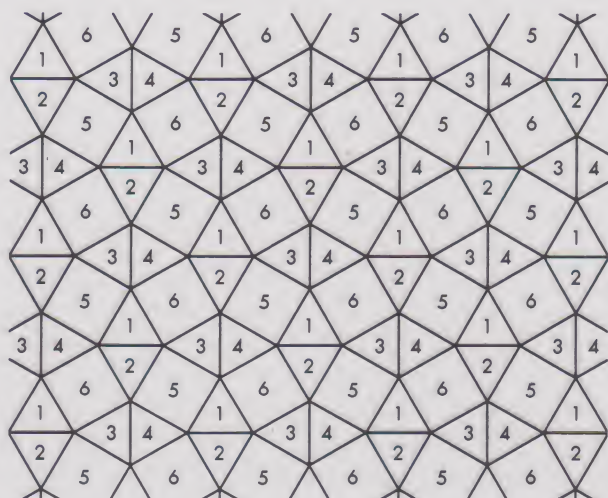
M336 TILING CARD 1 SIDE 1 OVERLAY 2



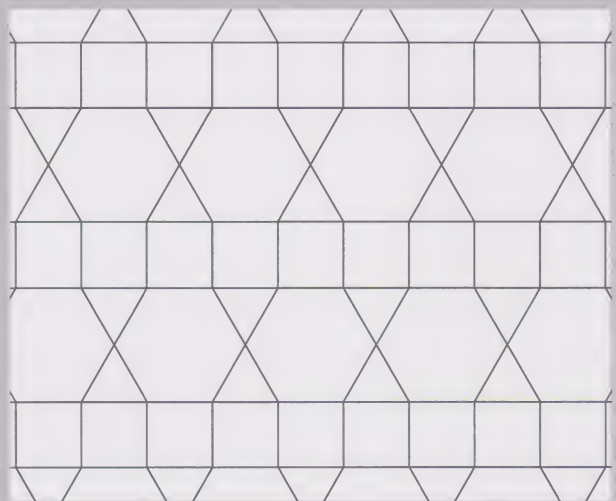
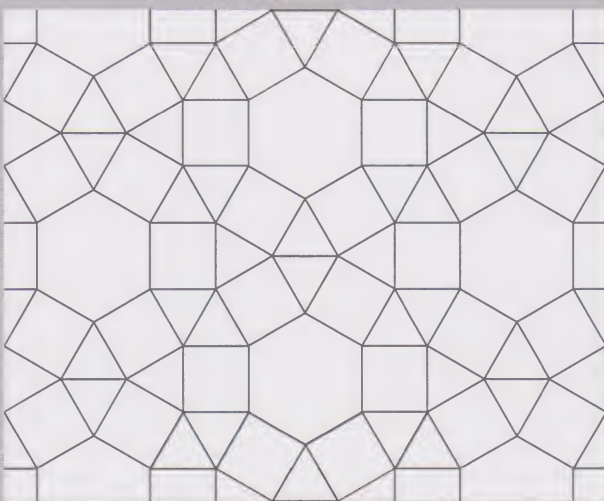
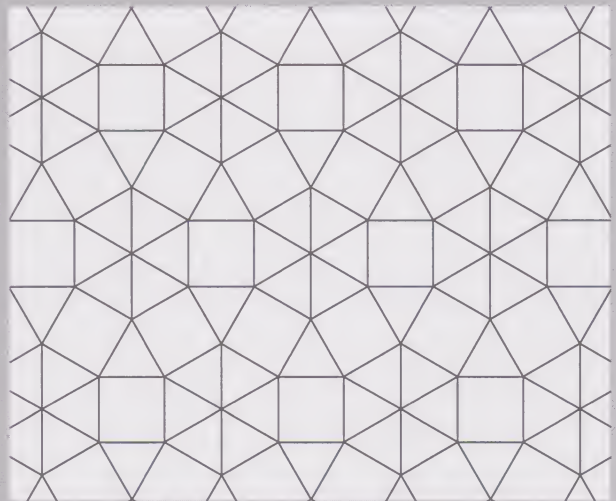
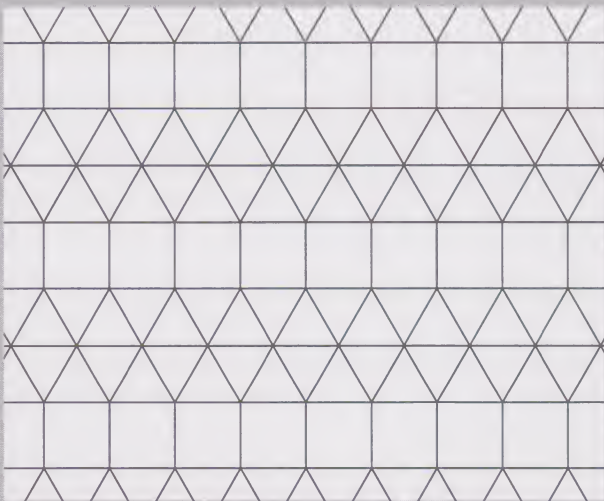
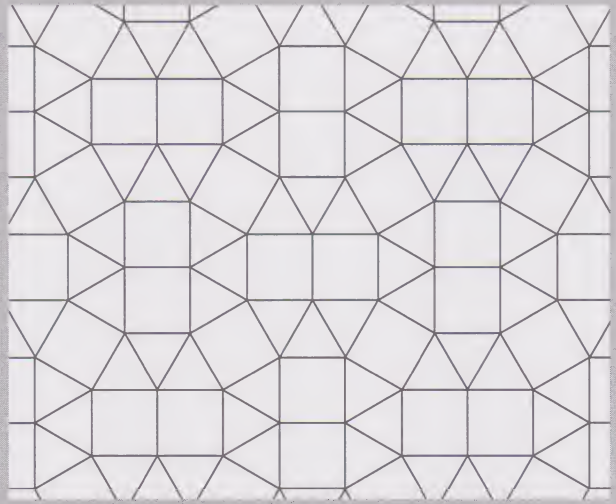
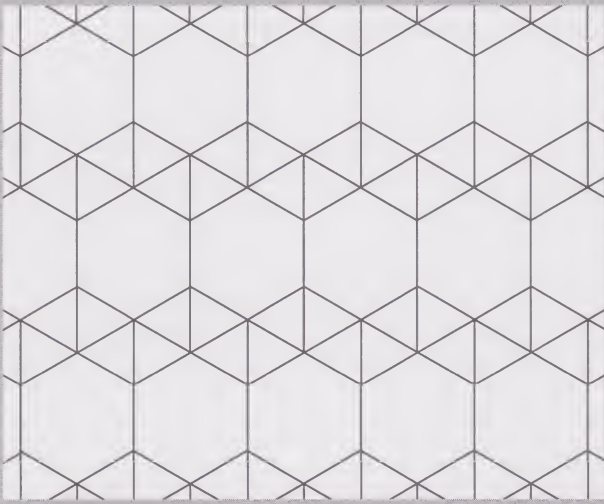
M336 TILING CARD 1 **SIDE 2 OVERLAY 1**



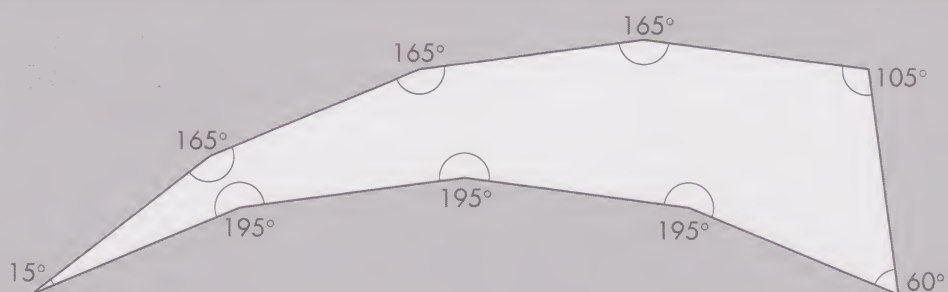
M336 TILING CARD 1 SIDE 2 OVERLAY 2



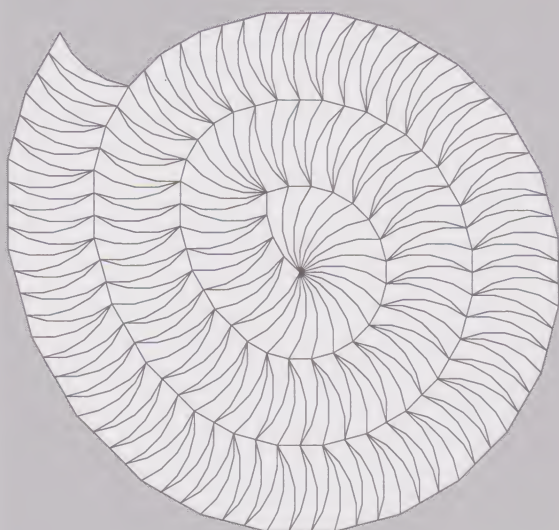
M336 TILING CARD 2 SIDE 1



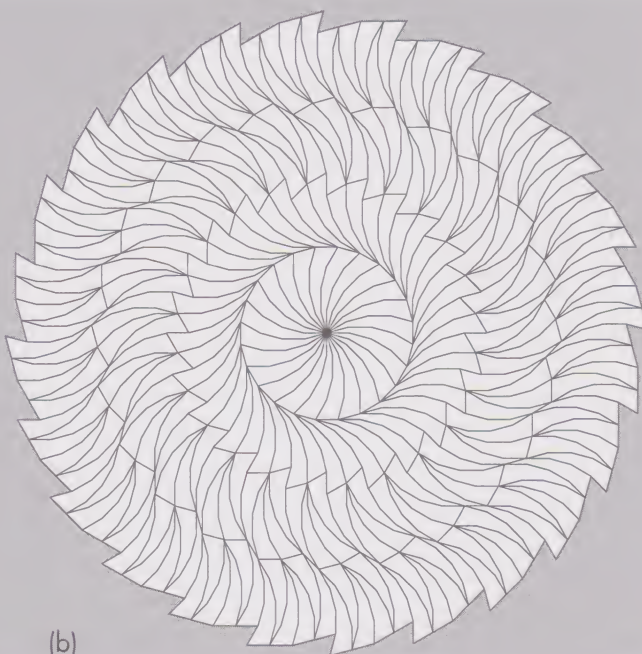
M336 TILING CARD 2 SIDE 2



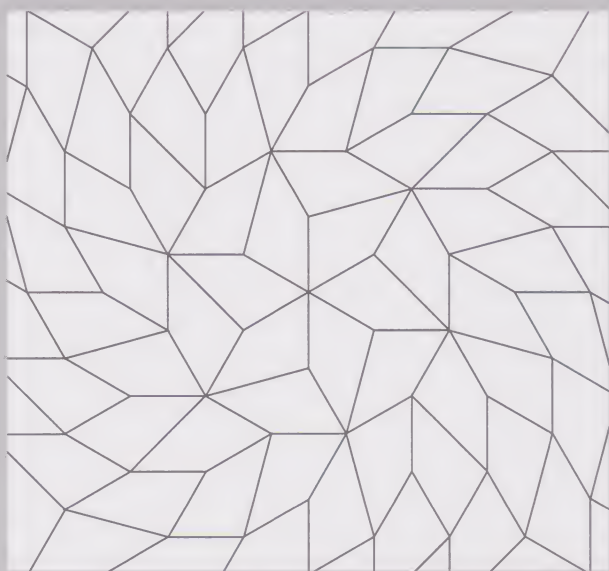
Template for (a) and (b)



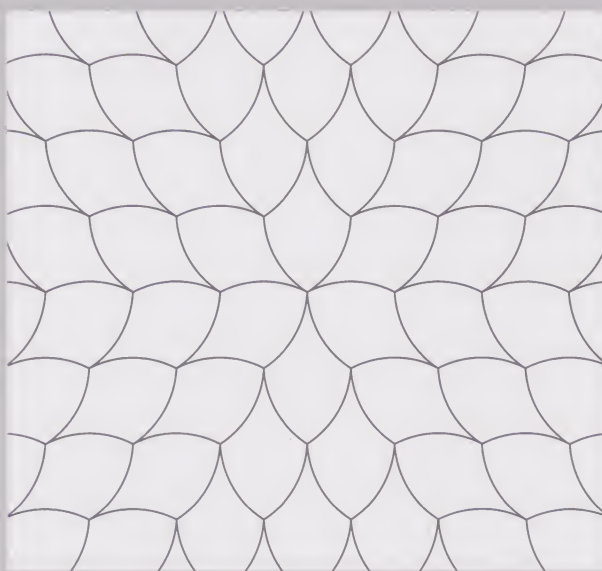
(a)



(b)

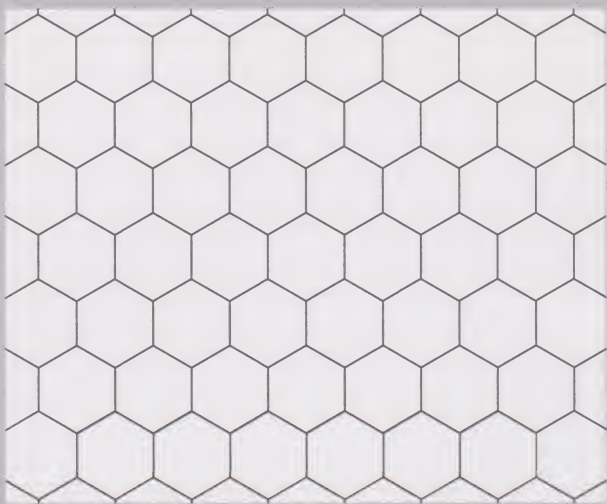


(c)



(d)

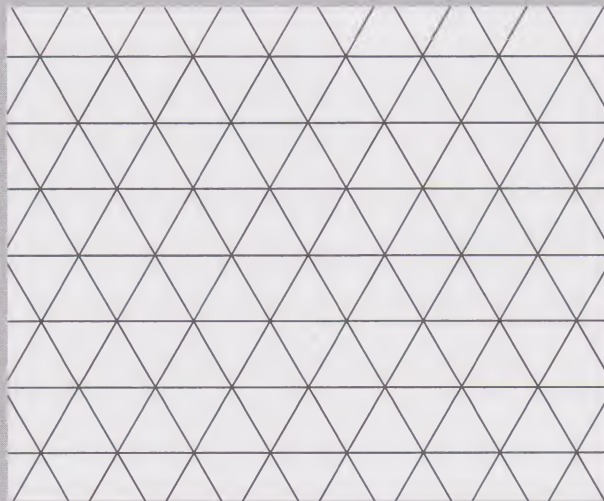
M336 TILING CARD 3 SIDE 1



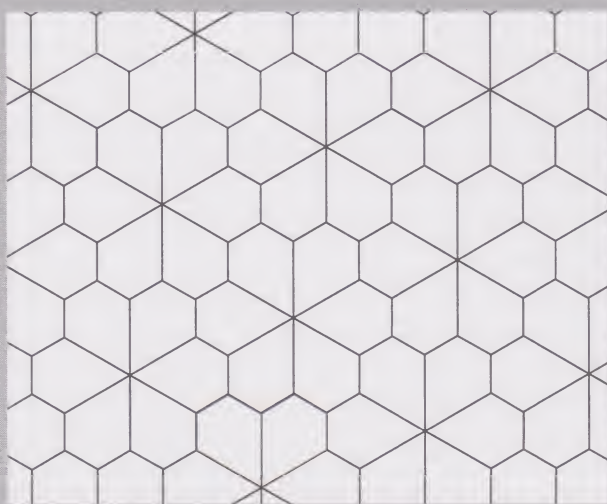
[3,3,3,3,3,3]



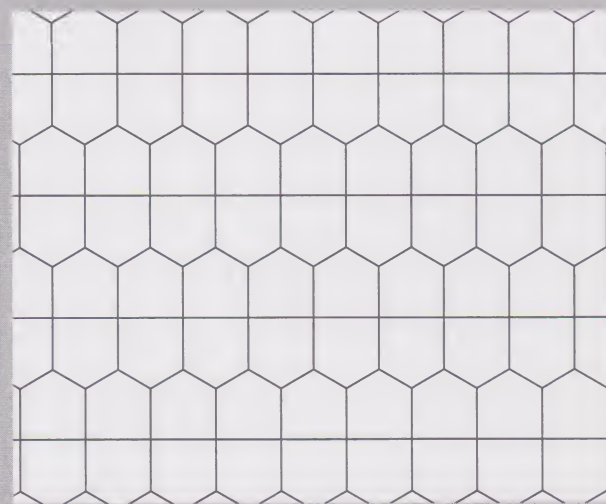
[4,4,4,4]



[6,6,6]

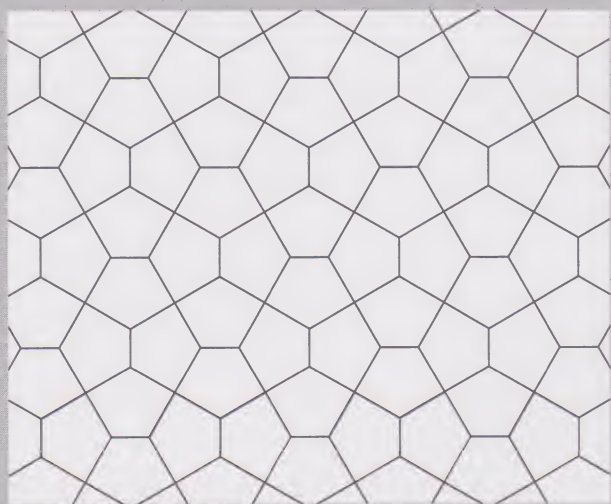


[3,3,3,3,6]

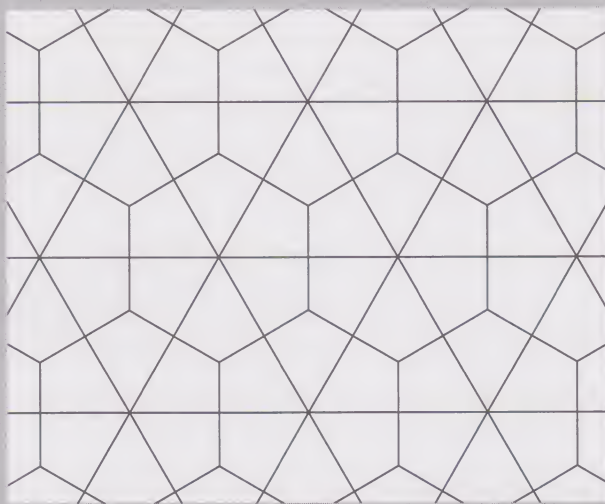


[3,3,3,4,4]

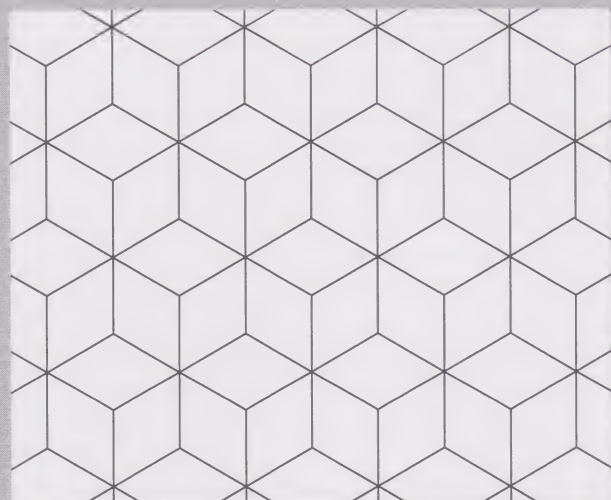
M336 TILING CARD 3 SIDE 2



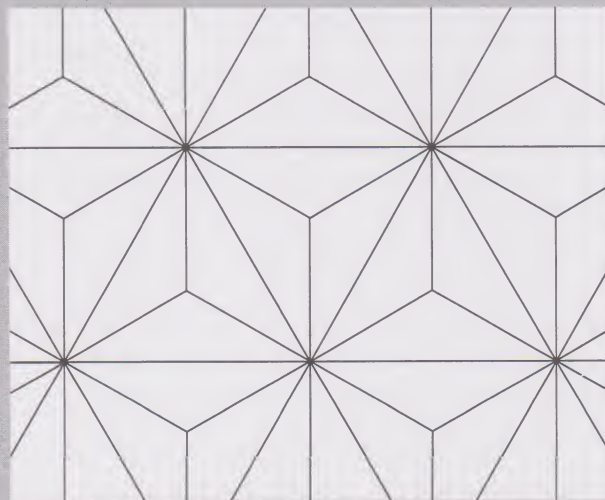
[3,3,4,3,4]



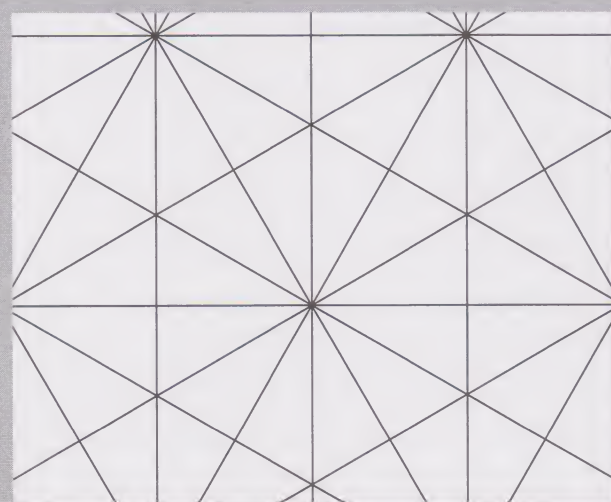
[3,4,6,4]



[3,6,3,6]



[3,12,12]

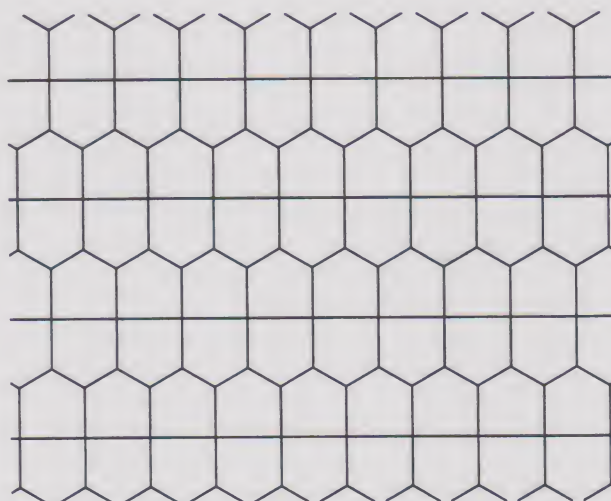
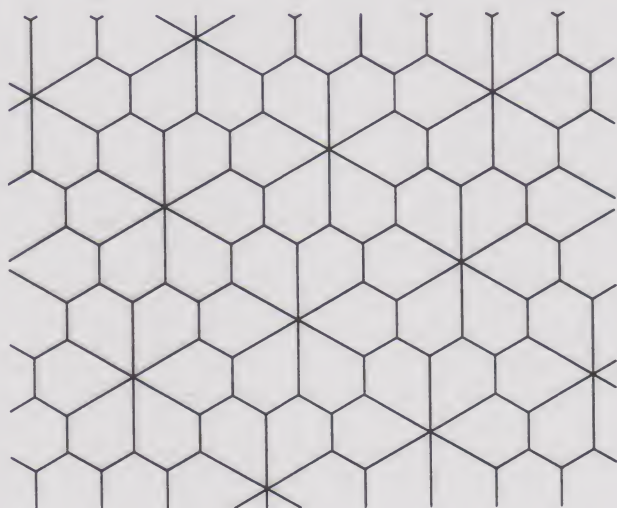
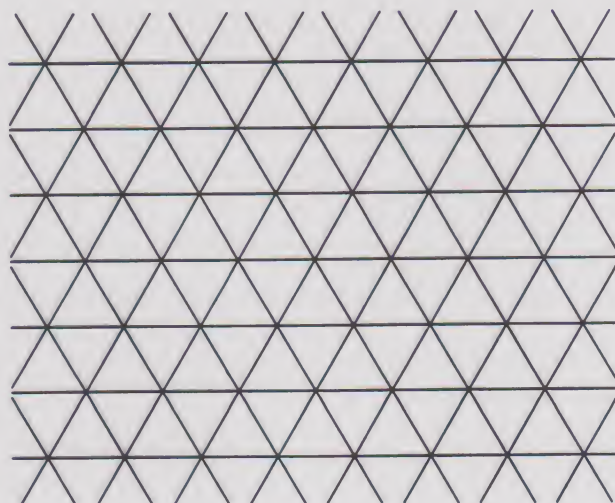
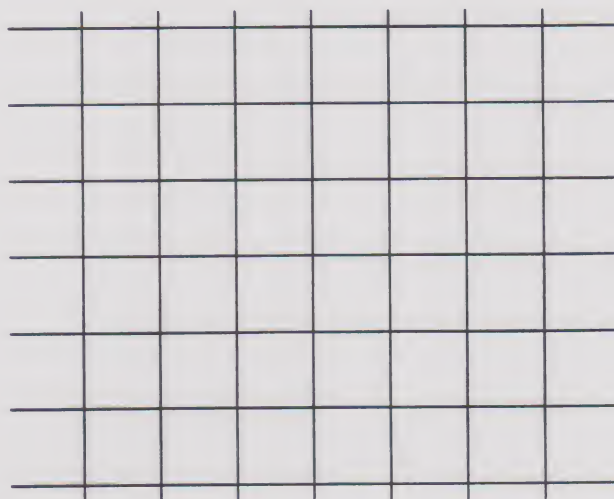
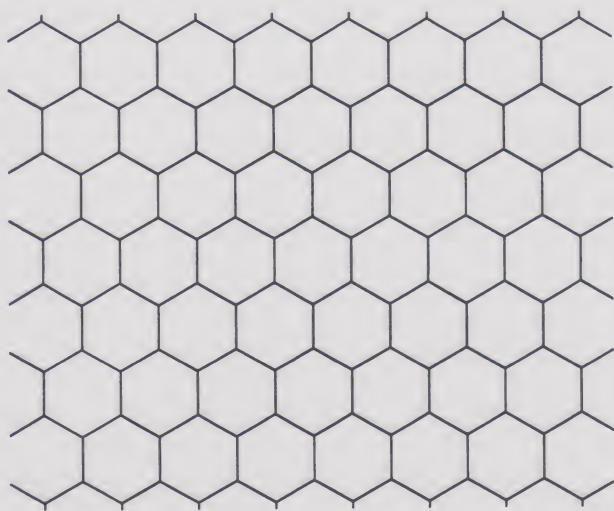


[4,6,12]

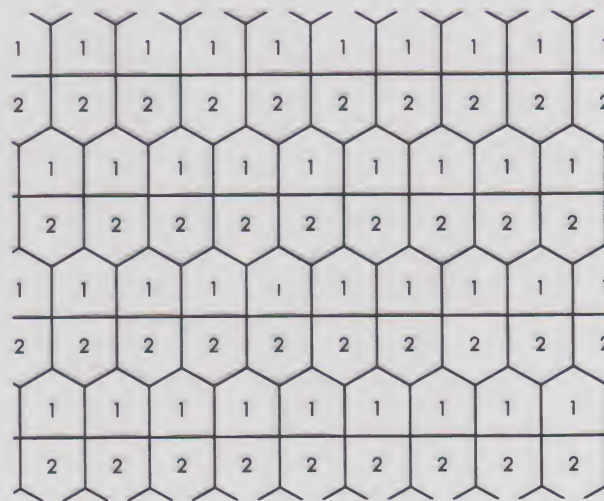
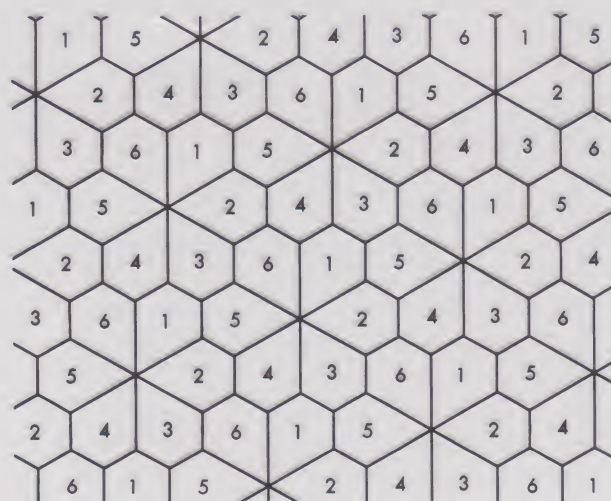
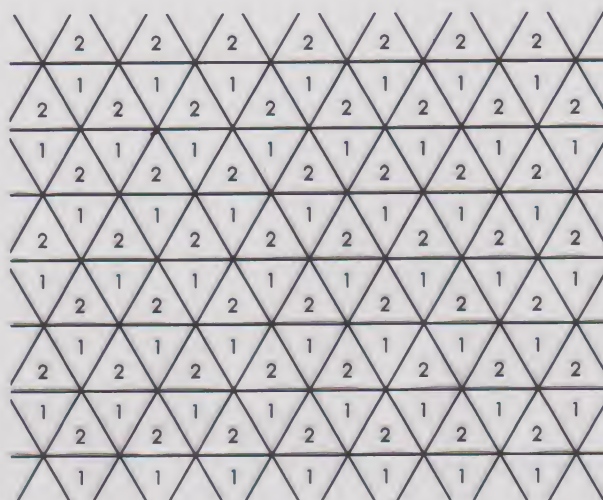
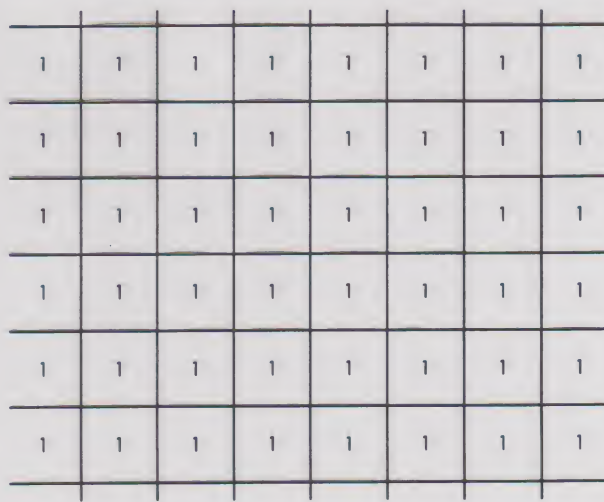
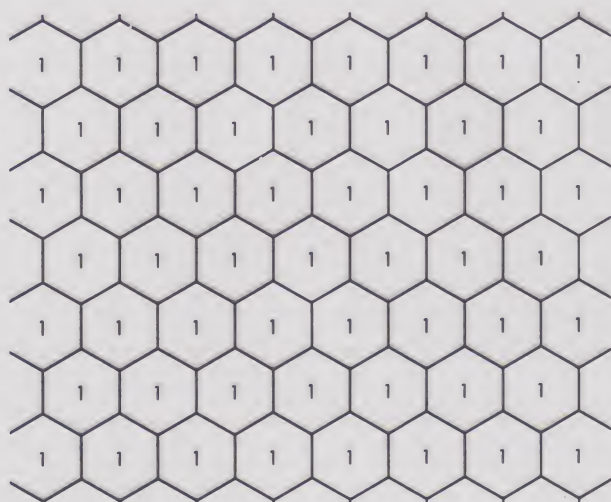


[4,8,8]

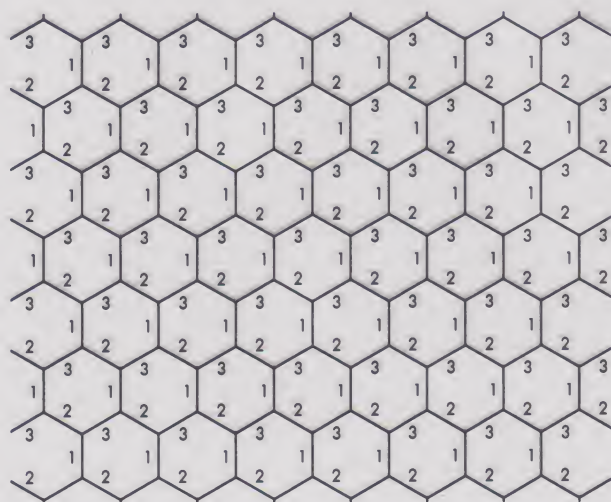
M336 TILING CARD 3 SIDE 1 OVERLAY 1



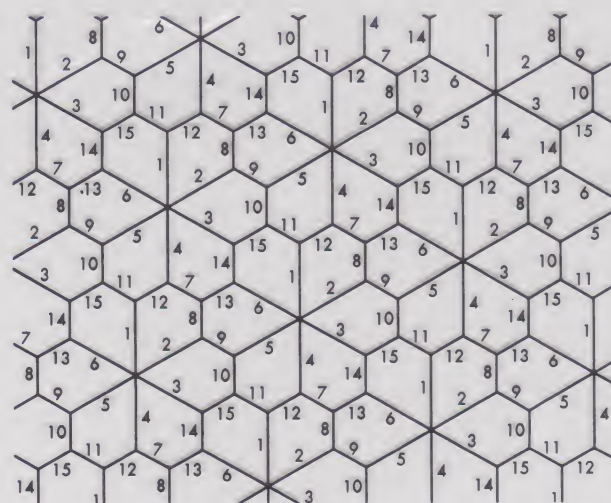
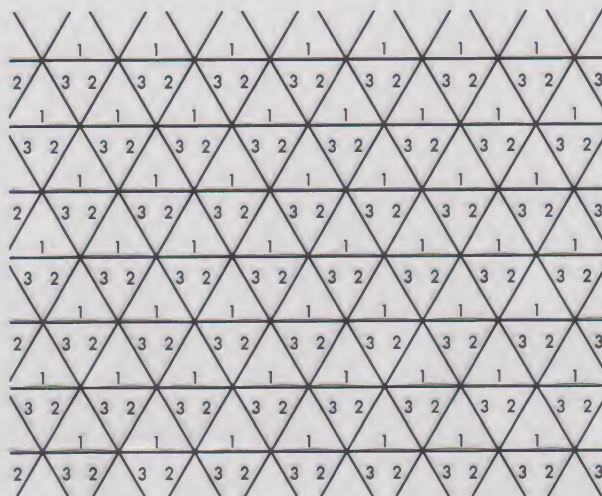
M336 TILING CARD 3 SIDE 1 OVERLAY 2



M336 TILING CARD 3 SIDE 1 OVERLAY 3

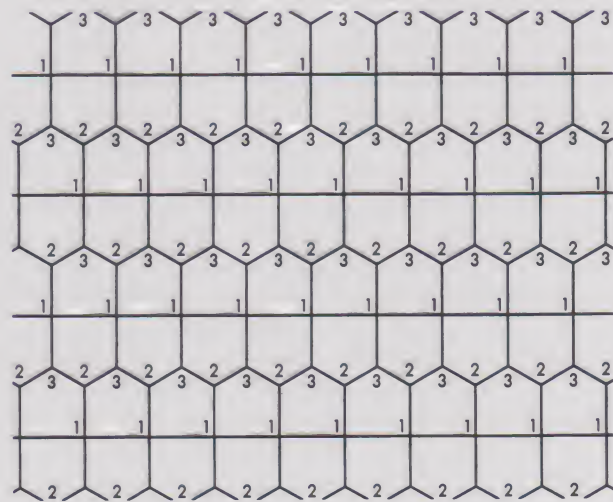
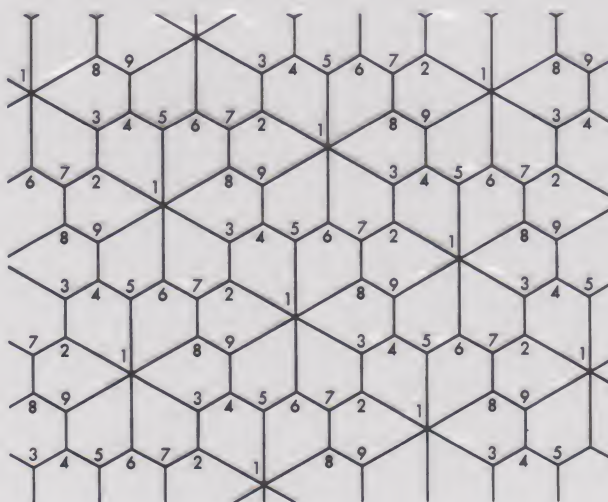
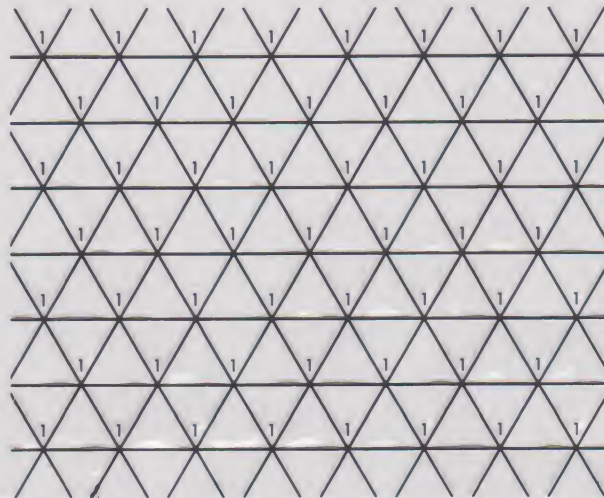
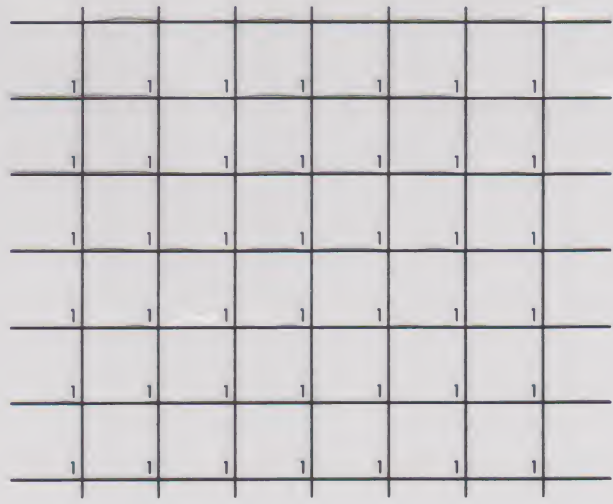
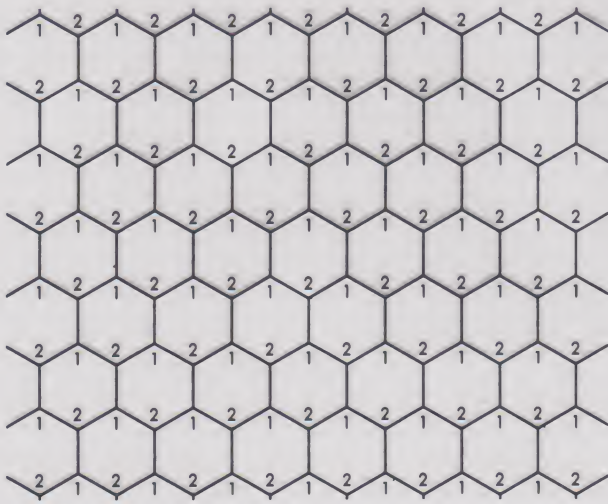


1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2

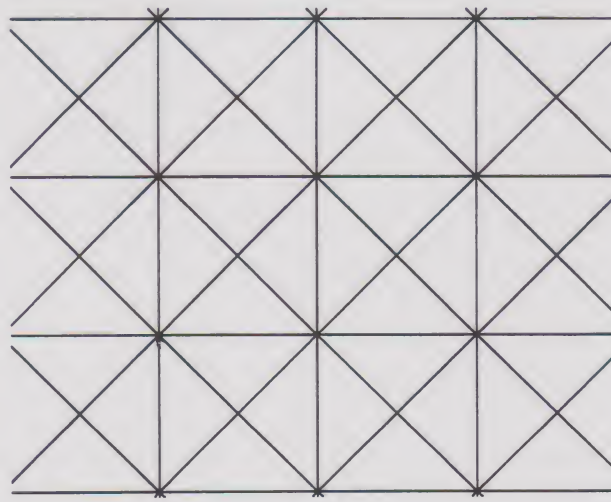
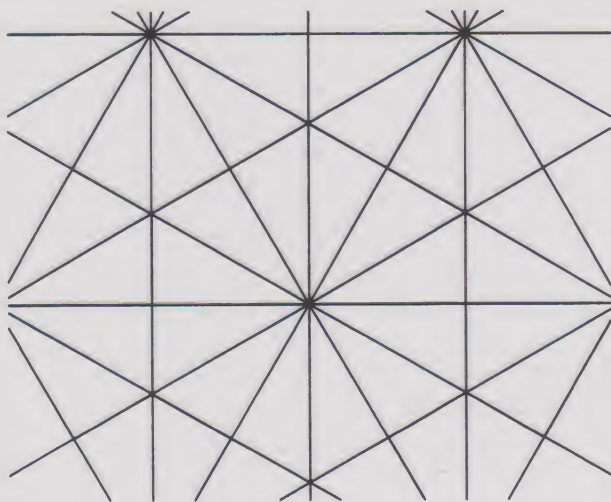
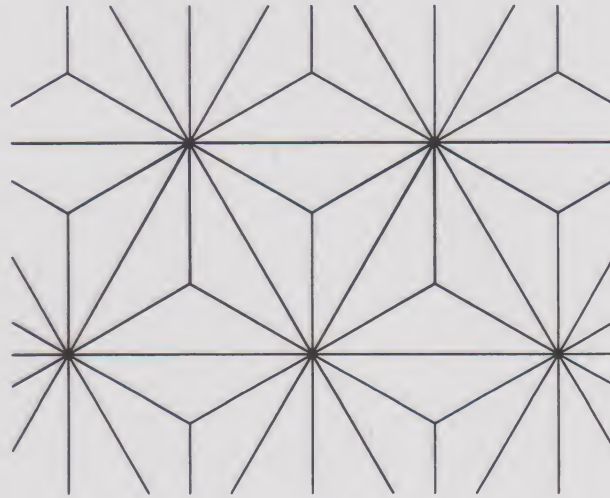
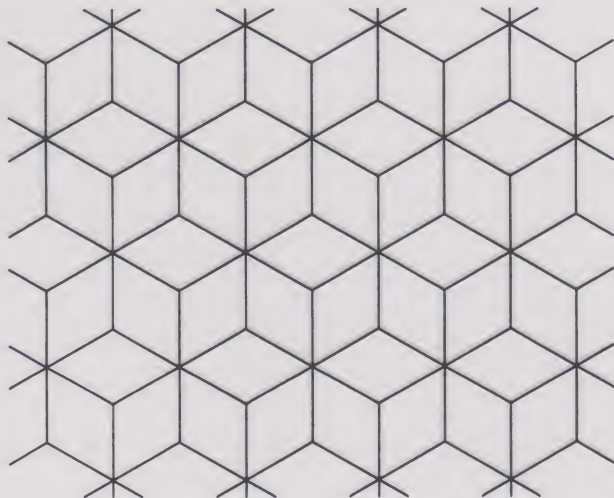
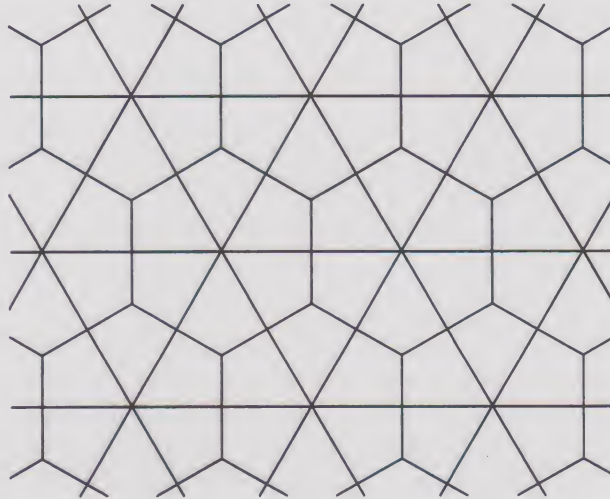
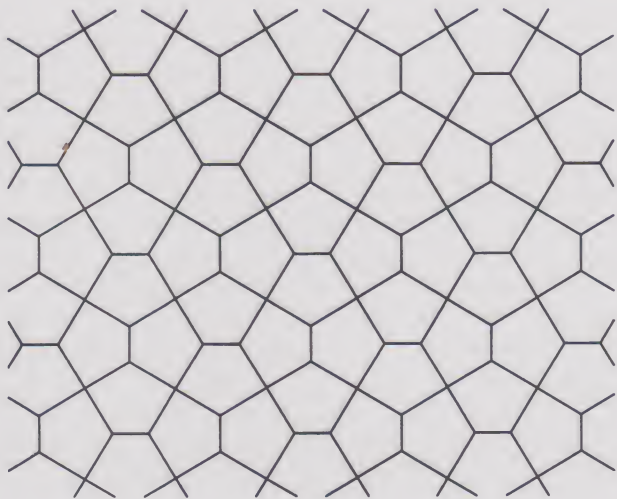


4	4	4	4	4	4	4	4	4
1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	3	3	3
5	5	5	5	5	5	5	5	5
1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	3	3	3
5	5	5	5	5	5	5	5	5
1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	3	3	3
5	5	5	5	5	5	5	5	5

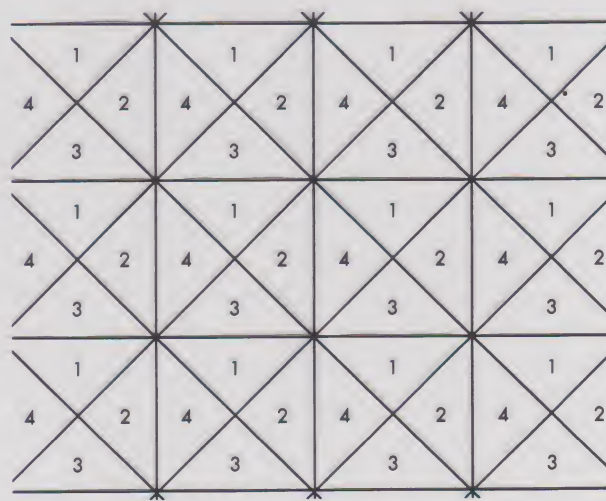
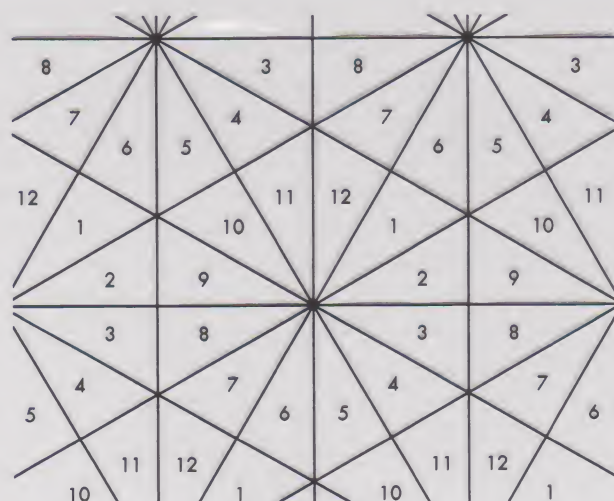
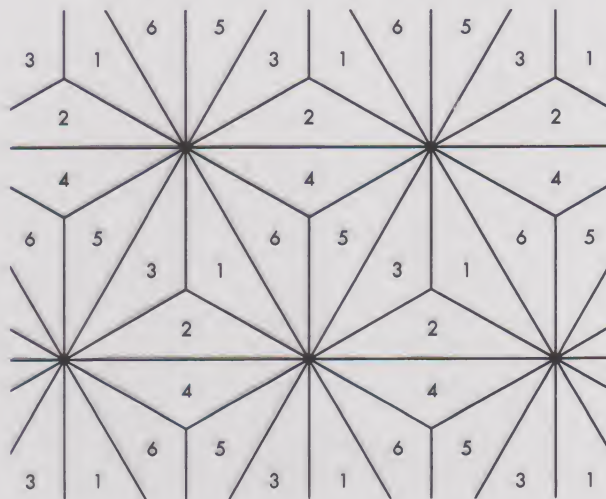
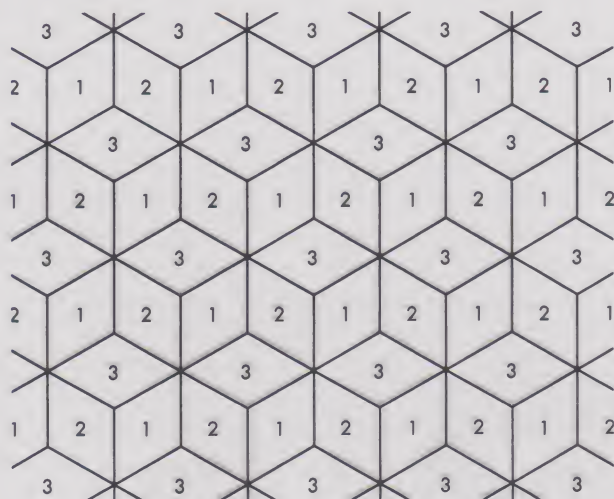
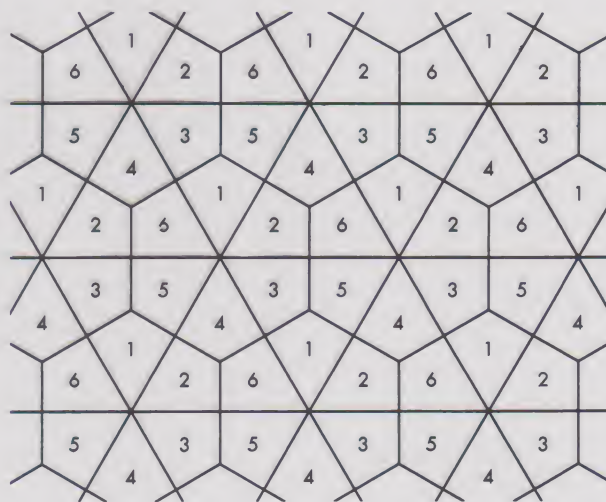
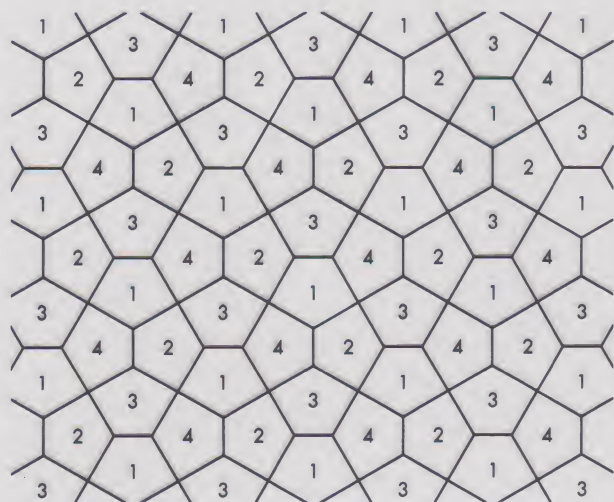
M336 TILING CARD 3 SIDE 1 OVERLAY 4



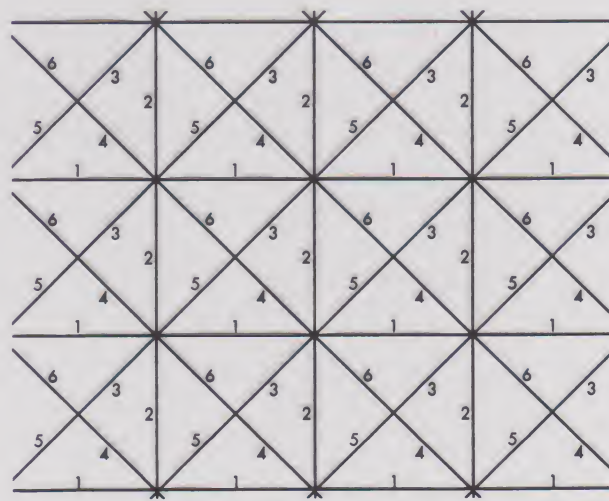
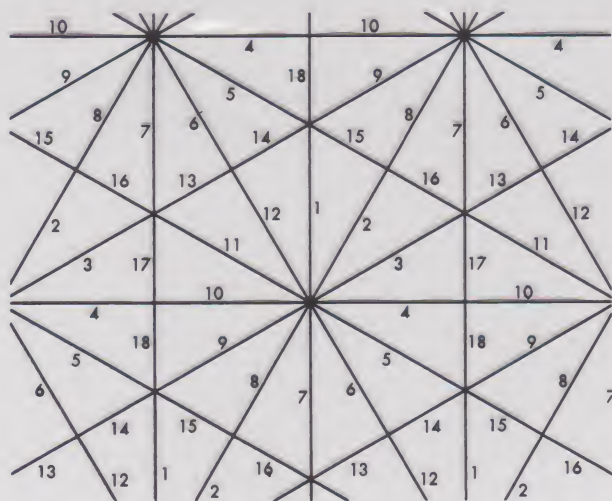
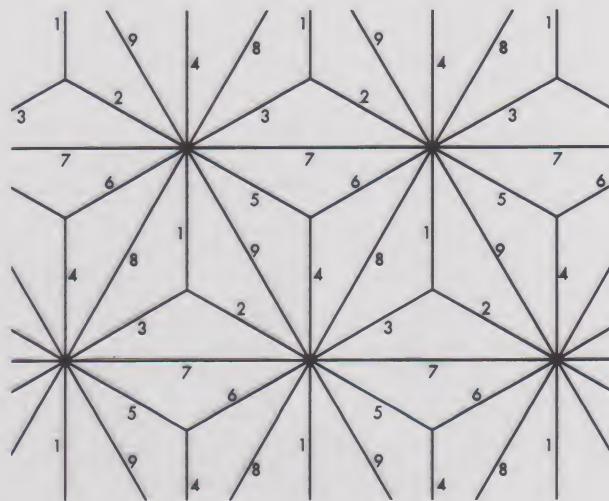
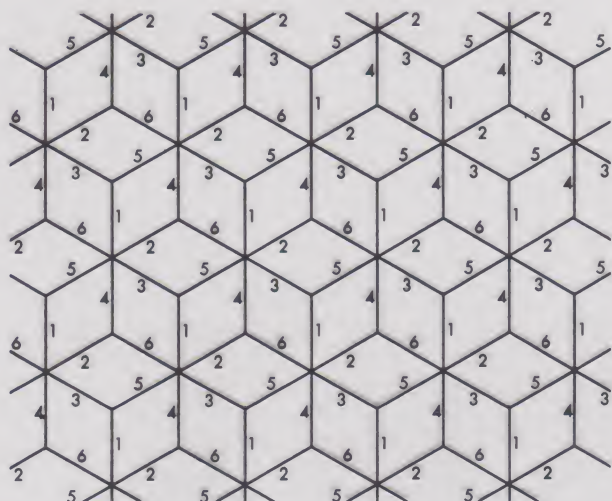
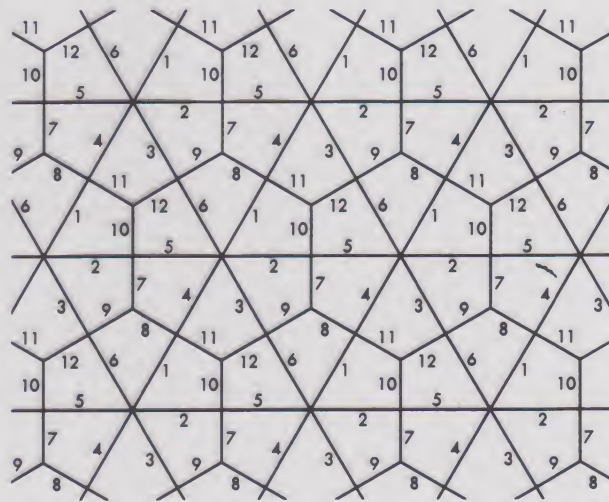
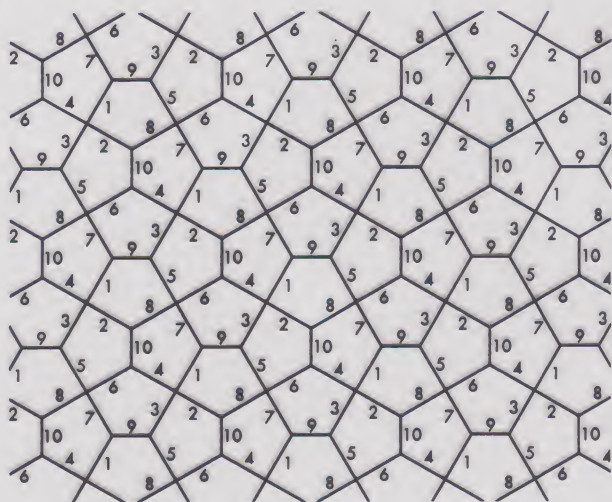
M336 TILING CARD 3 SIDE 2 OVERLAY 1



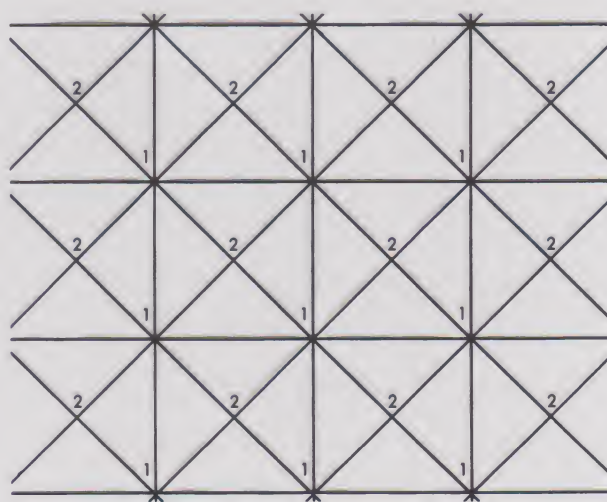
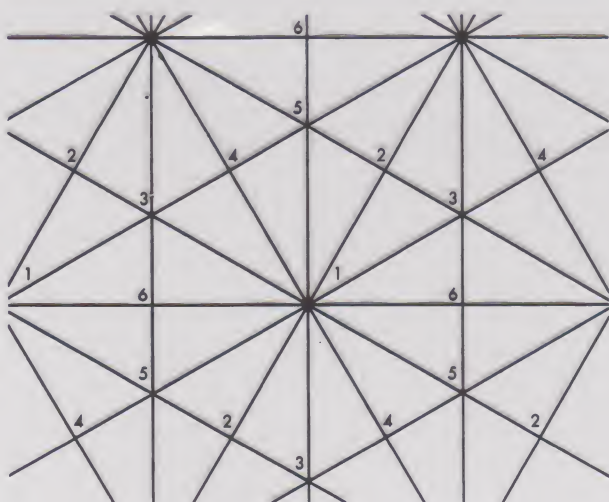
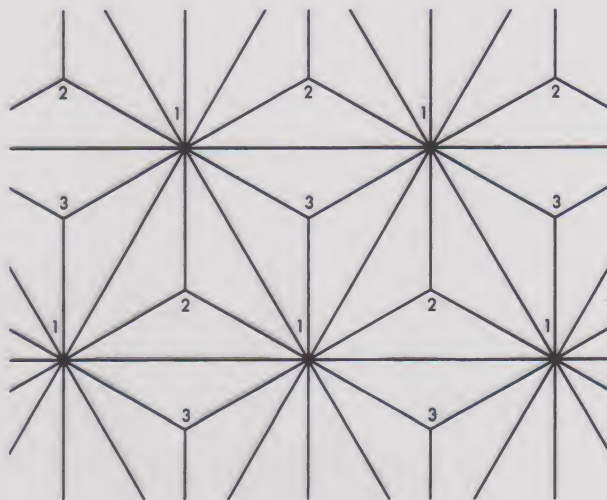
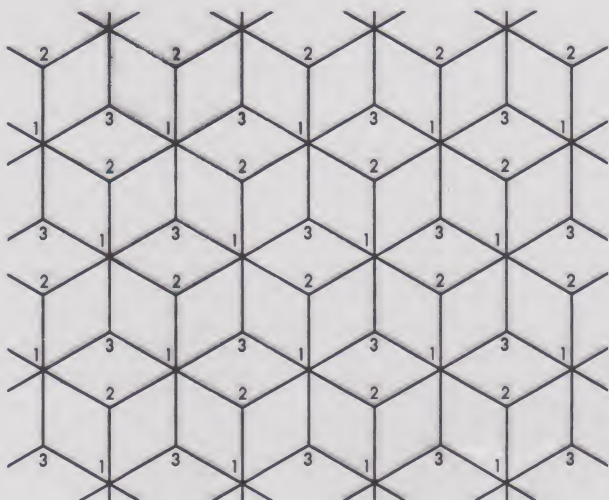
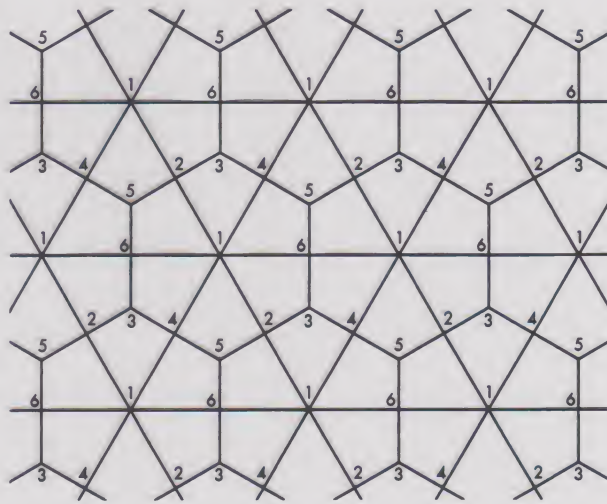
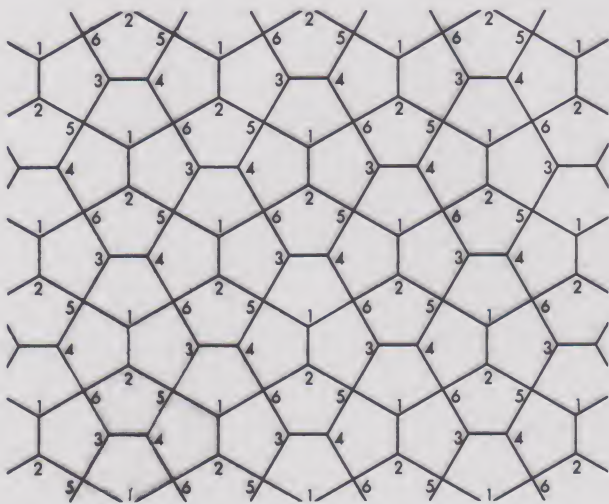
M336 TILING CARD 3 SIDE 2 OVERLAY 2



M336 TILING CARD 3 SIDE 2 OVERLAY 3



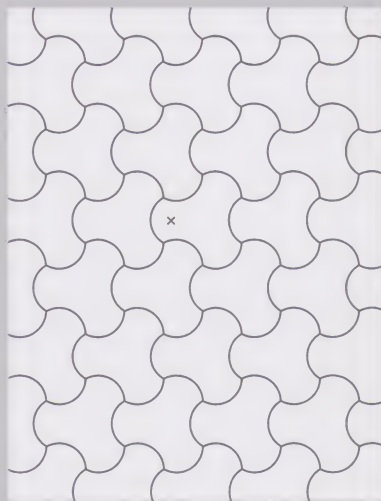
M336 TILING CARD 3 SIDE 2 OVERLAY 4



M336 TILING CARD 4 SIDE 1



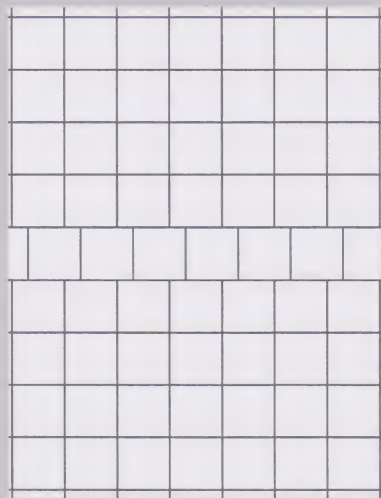
(a)



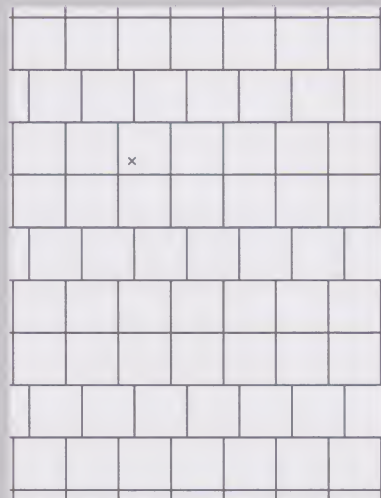
(b)



(c)



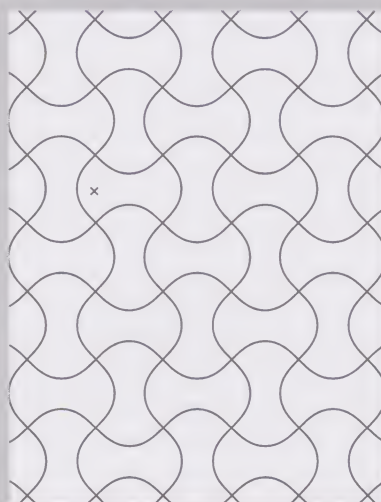
(d)



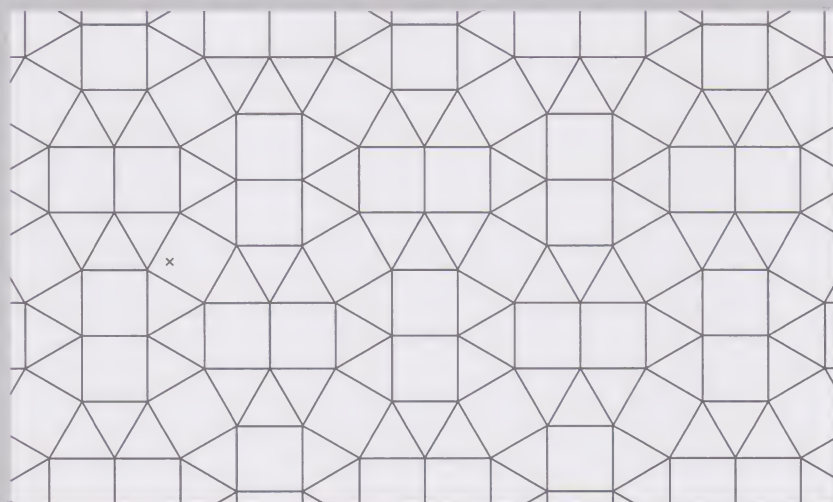
(e)



(f)

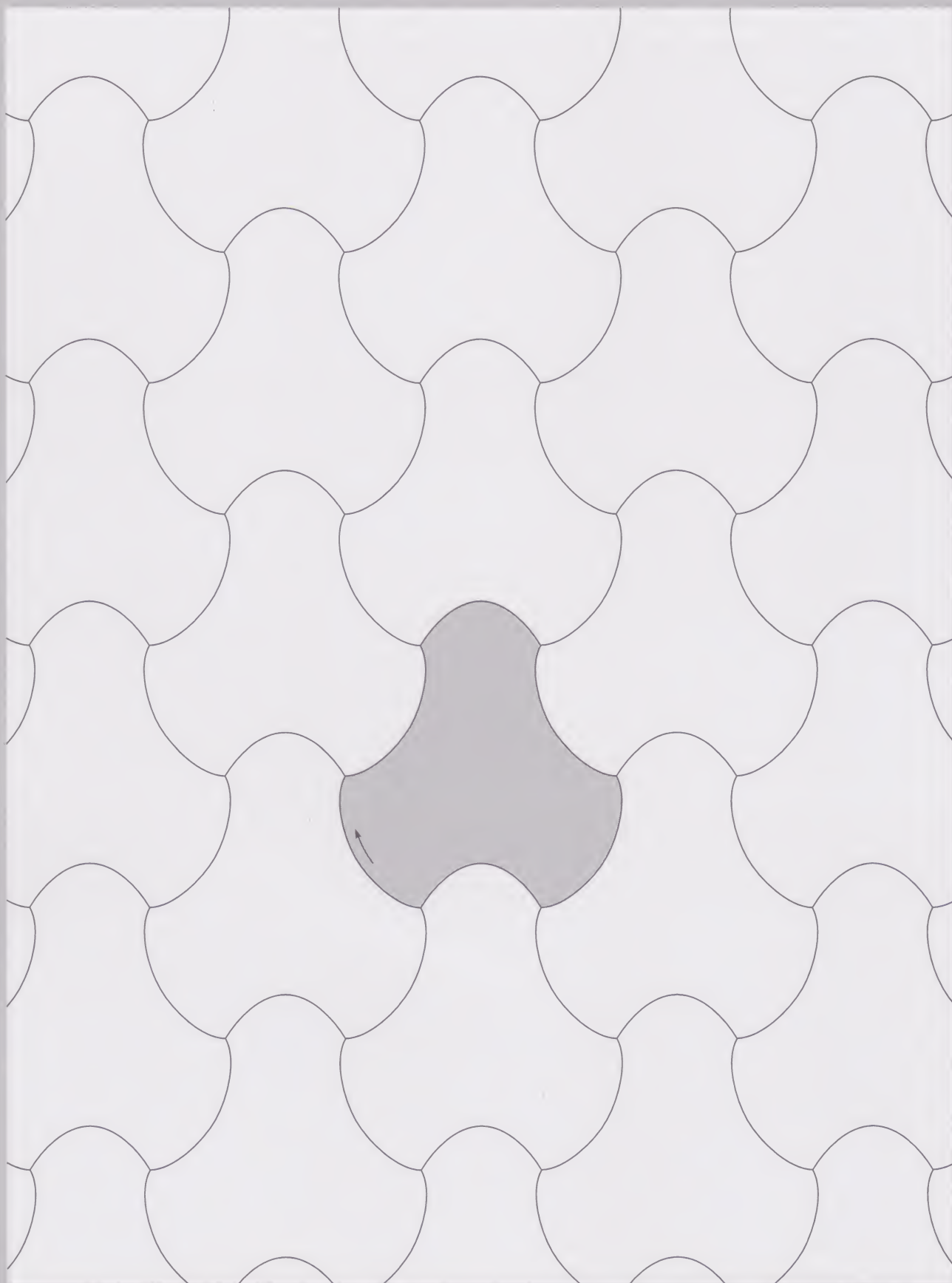


(g)

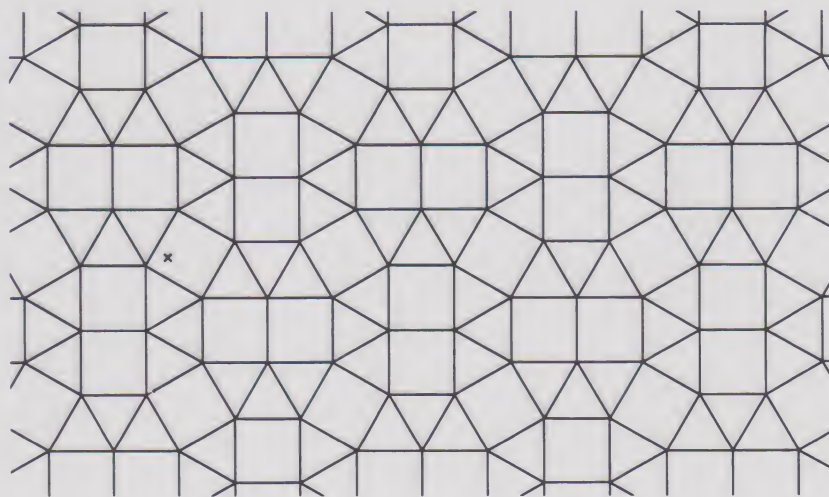
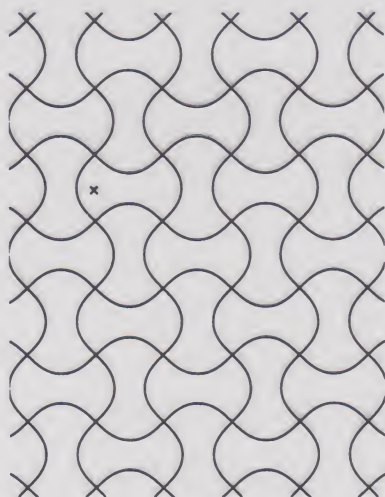
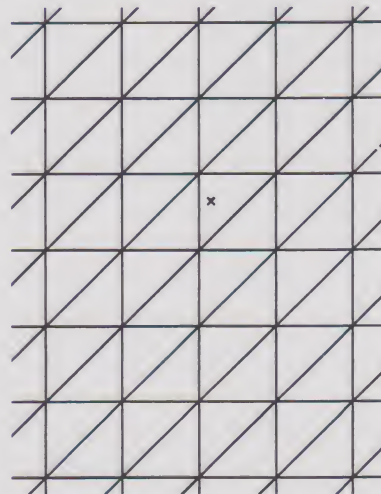
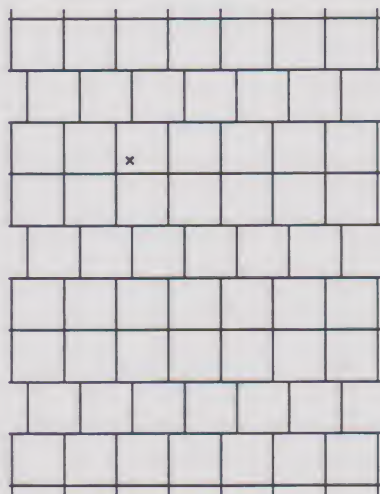
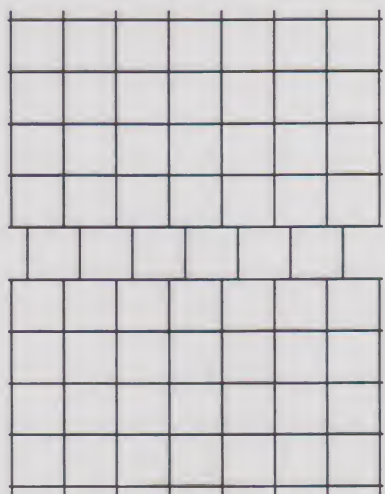
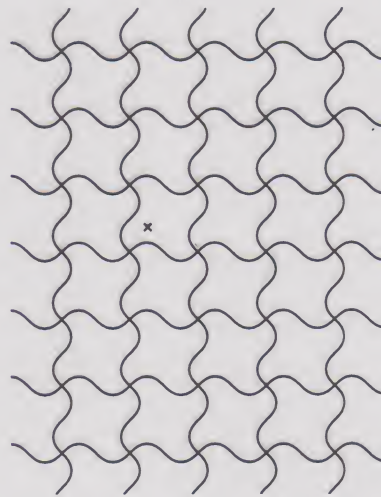
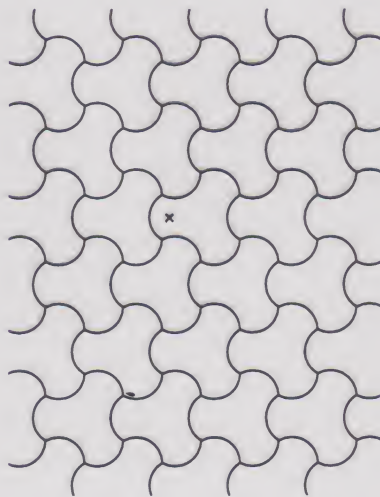
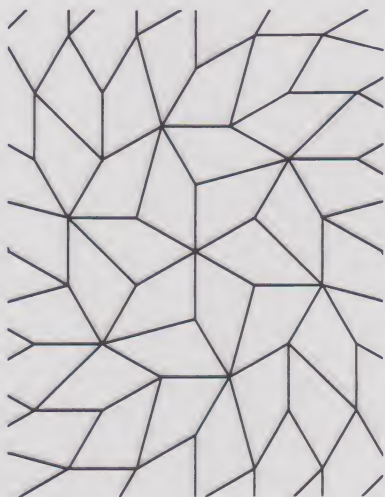


(h)

M336 TILING CARD 4 SIDE 2



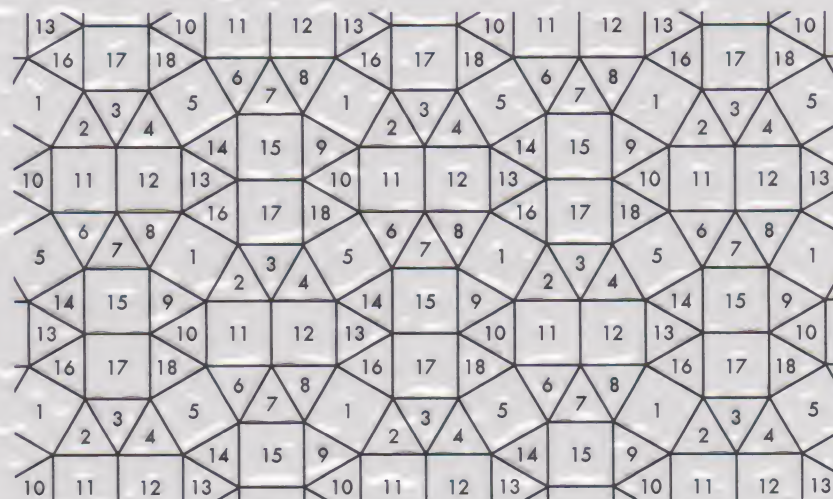
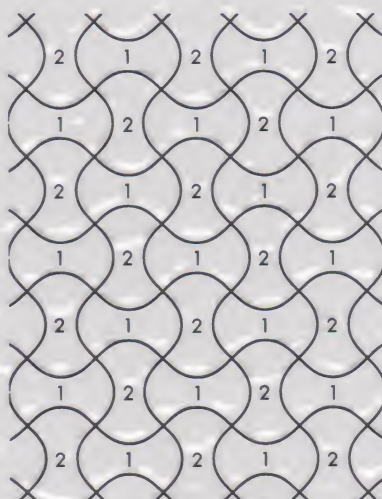
M336 TILING CARD 4 SIDE 1 OVERLAY 1



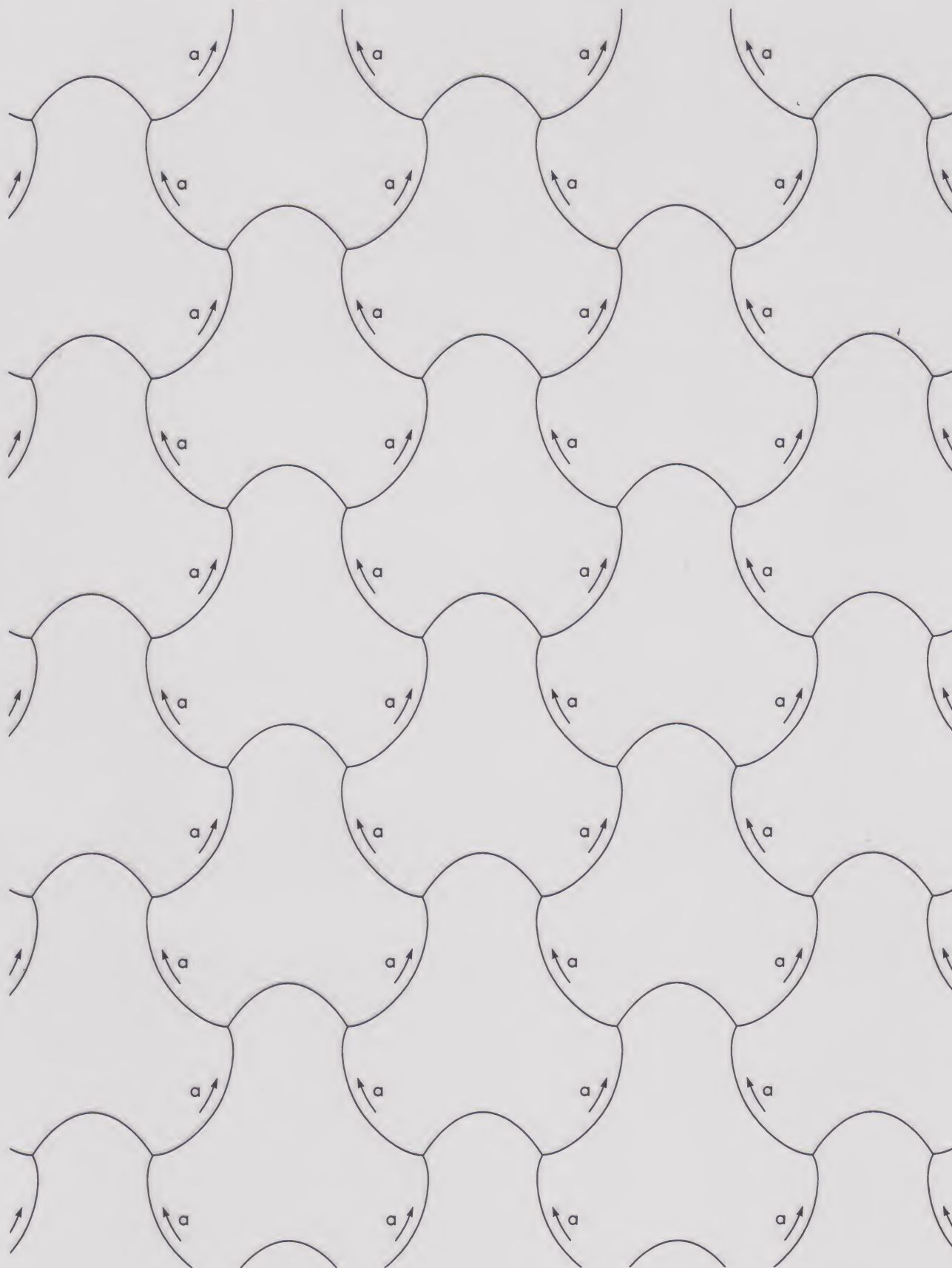
M336 TILING CARD 4 SIDE 1 OVERLAY 2

2	2	2	2	2	2	2
3	3	3	3	3	3	
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	
1	1	1	1	1	1	1

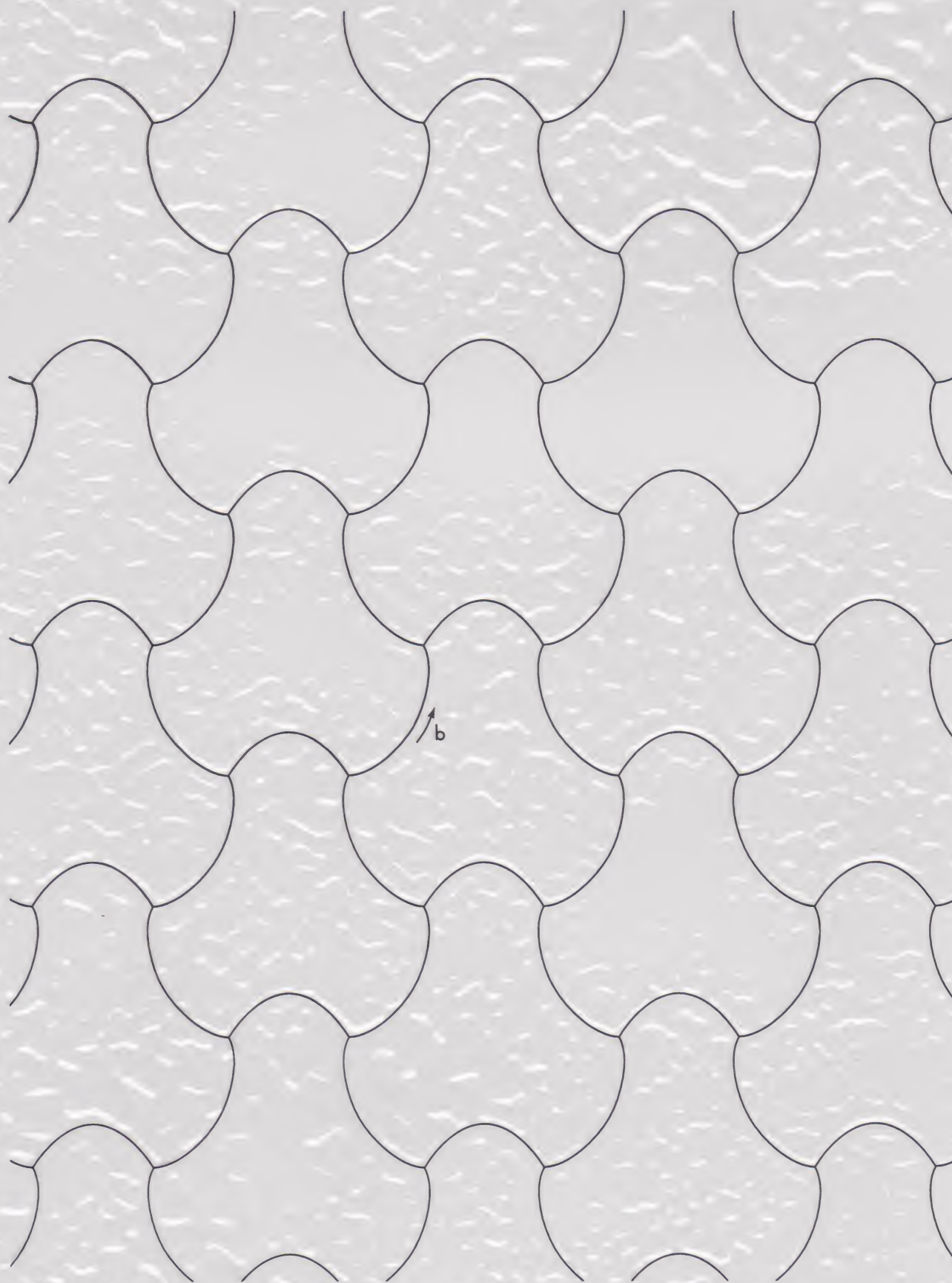
1	1	1	1	1	1
2	2	2	2	2	2
1	1	1	1	1	1
2	2	2	2	2	2
1	1	1	1	1	1
2	2	2	2	2	2
1	1	1	1	1	1
2	2	2	2	2	2
1	1	1	1	1	1
2	2	2	2	2	2



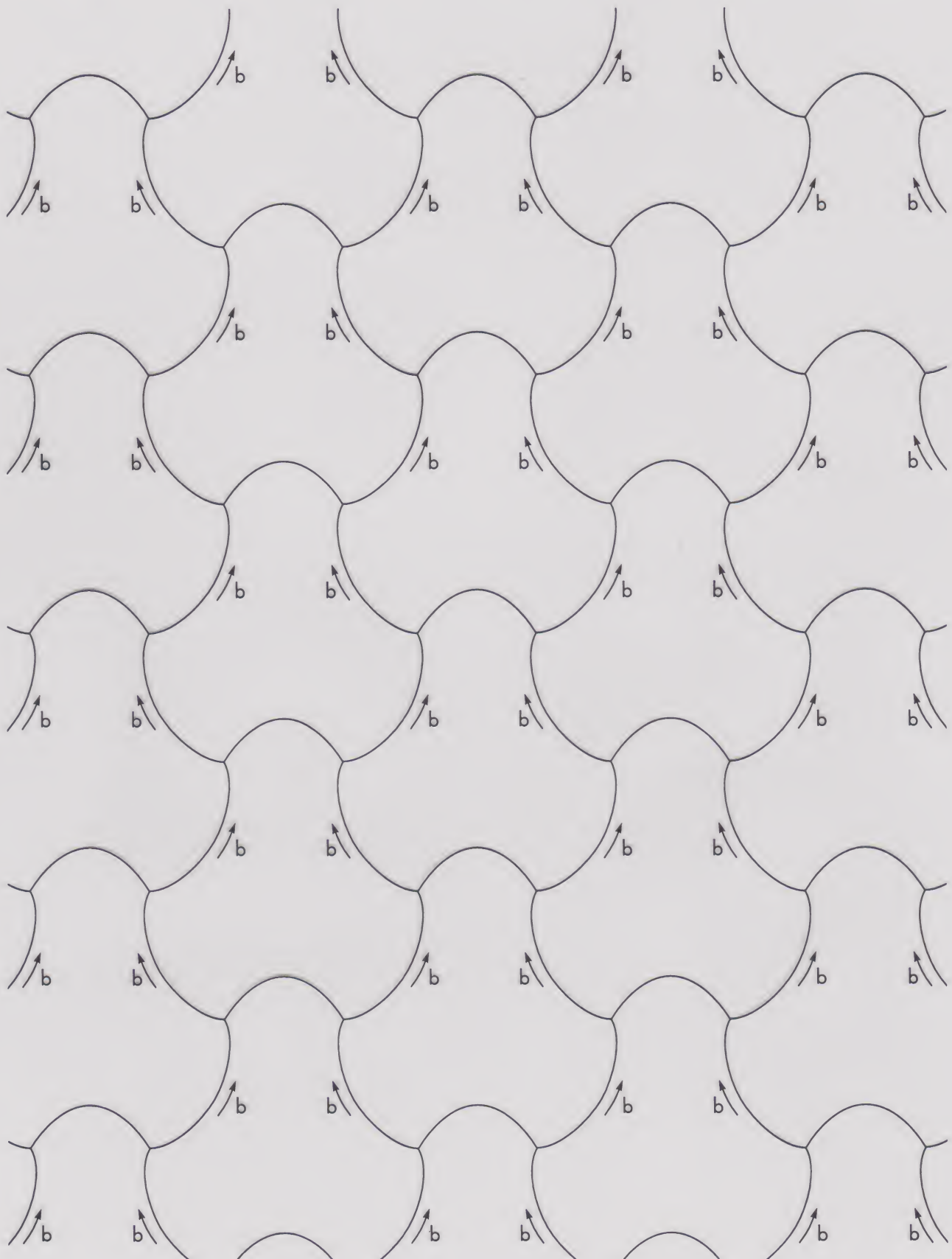
M336 TILING CARD 4 SIDE 2 OVERLAY 1



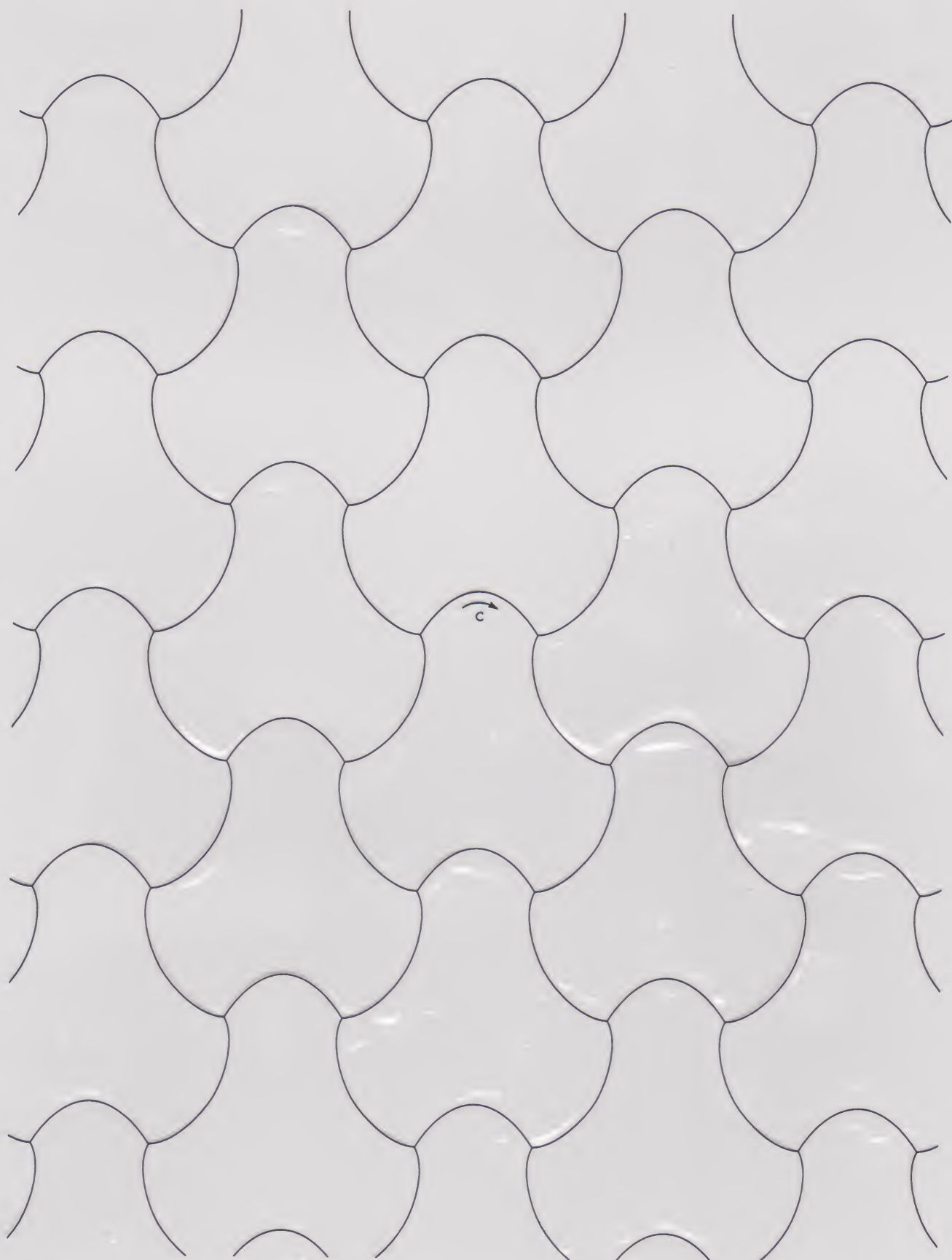
M336 TILING CARD 4 SIDE 2 OVERLAY 2



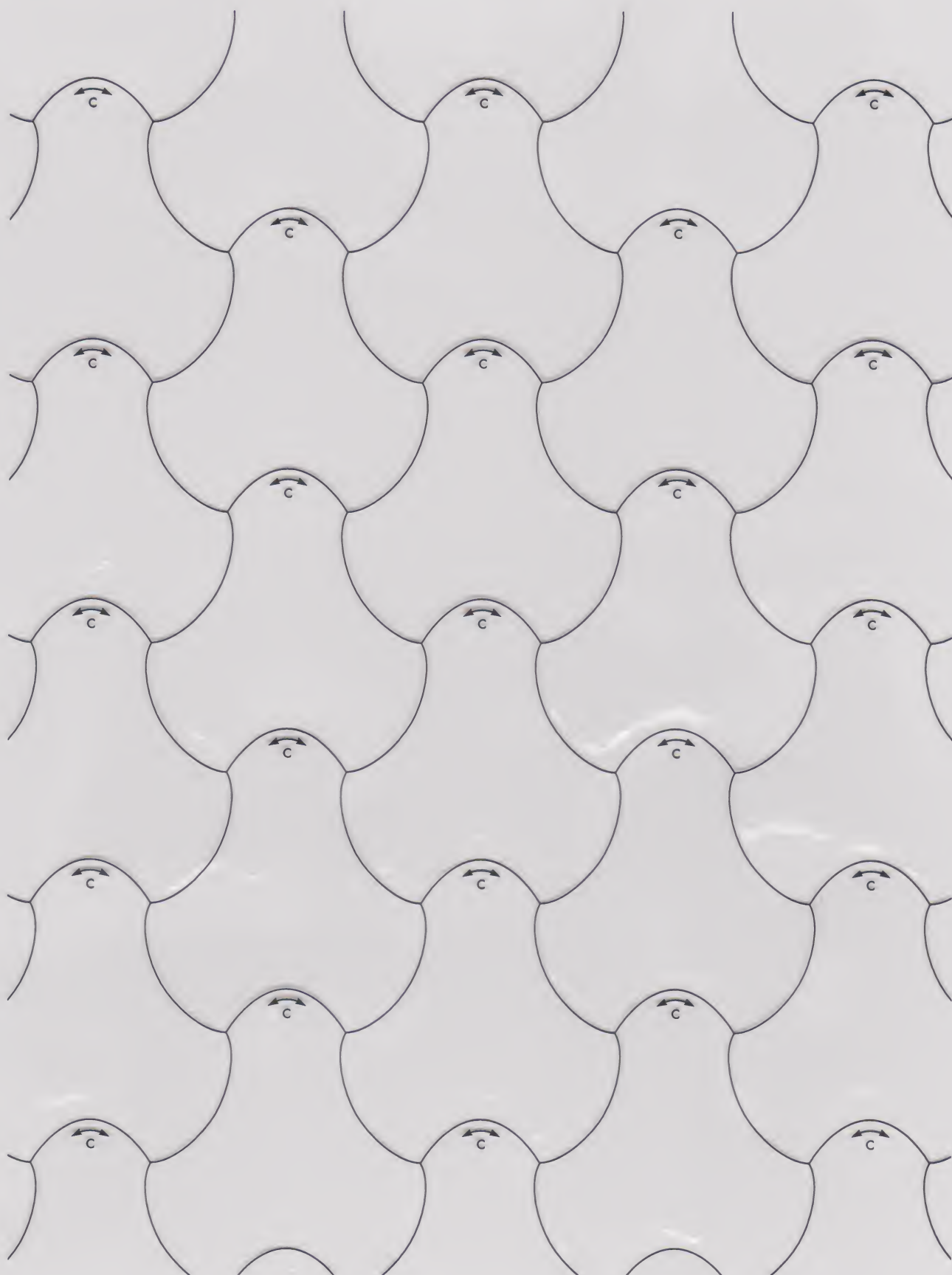
M336 TILING CARD 4 SIDE 2 OVERLAY 3



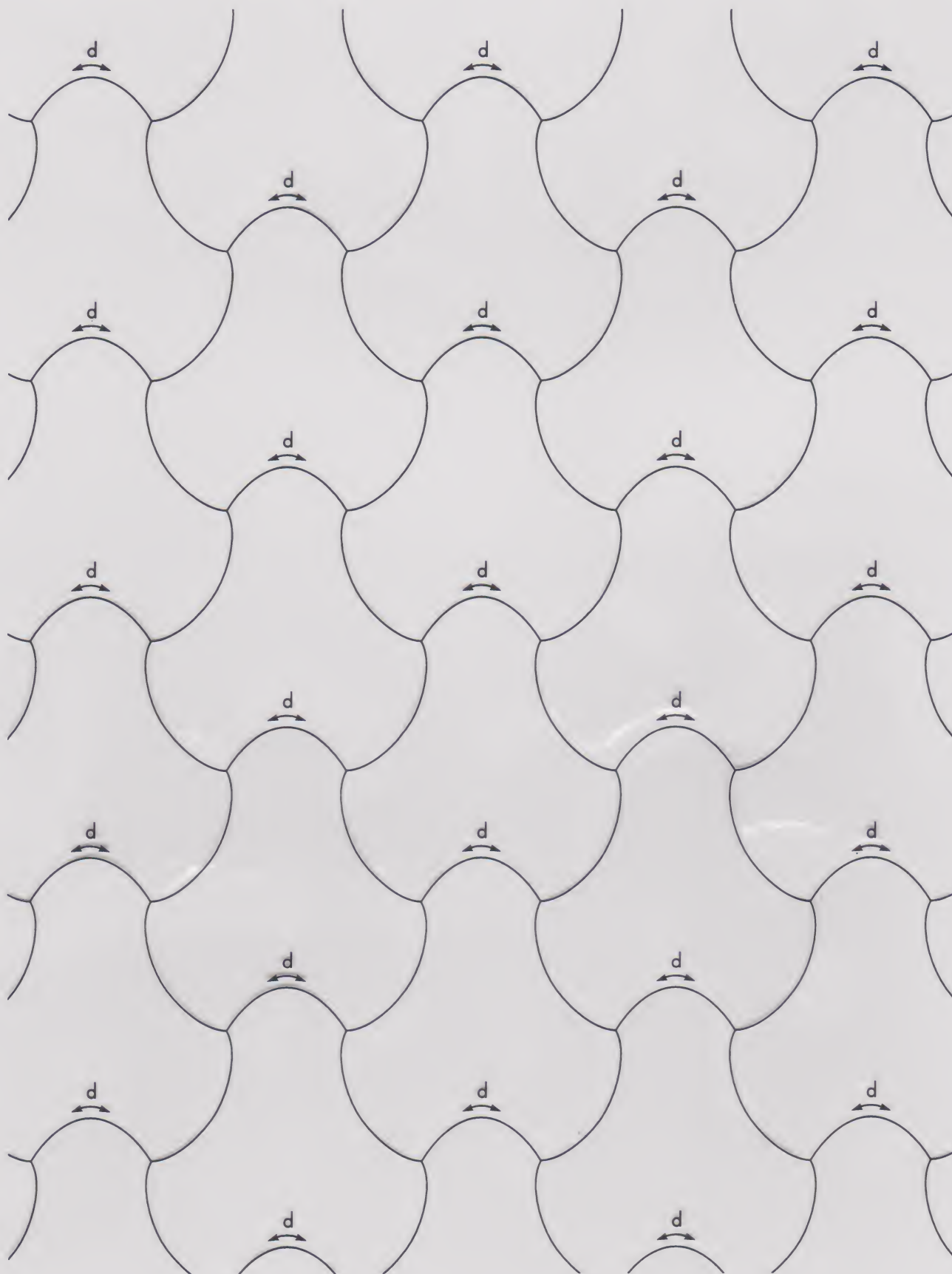
M336 TILING CARD 4 SIDE 2 OVERLAY 4



M336 TILING CARD 4 SIDE 2 OVERLAY 5

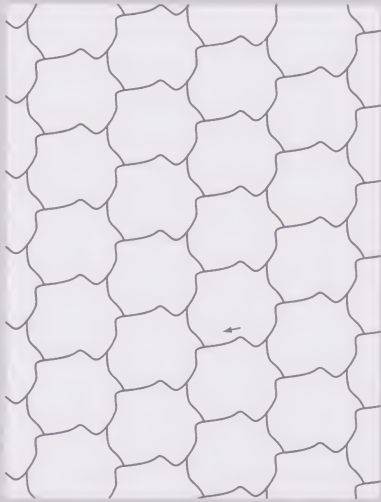


M336 TILING CARD 4 SIDE 2 OVERLAY 6



M336 TILING CARD 5 SIDE 1

Tile type [3,3,3,3,3,3]



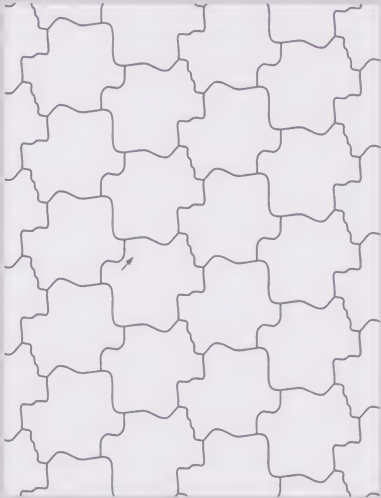
IH1

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ d \leftarrow e \leftarrow f \leftarrow a \leftarrow b \leftarrow c \leftarrow \end{matrix}$$

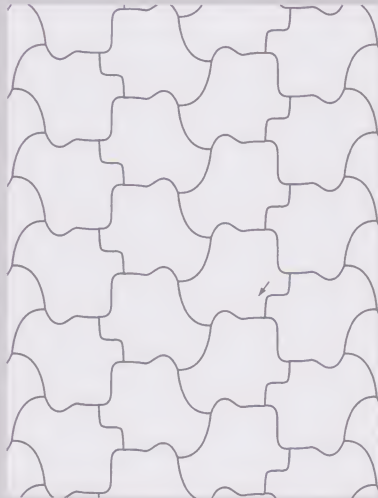

IH2

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ b \rightarrow a \rightarrow f \rightarrow e \rightarrow d \rightarrow c \rightarrow \end{matrix}$$

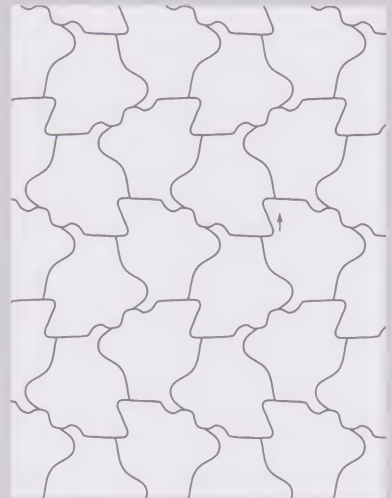

IH3

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ c \rightarrow e \rightarrow a \rightarrow f \rightarrow b \rightarrow d \rightarrow \end{matrix}$$


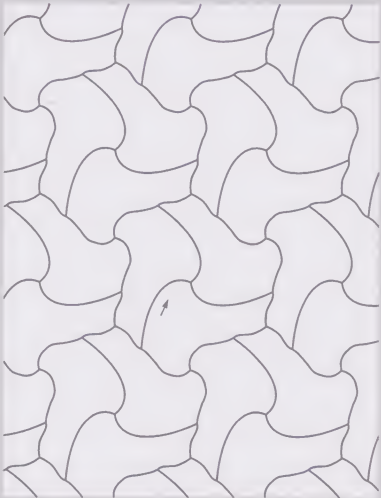
IH4

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ a \leftarrow e \leftarrow c \leftarrow d \leftarrow b \leftarrow f \leftarrow \end{matrix}$$


IH5

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ a \leftarrow e \leftarrow d \leftarrow c \leftarrow b \leftarrow f \leftarrow \end{matrix}$$


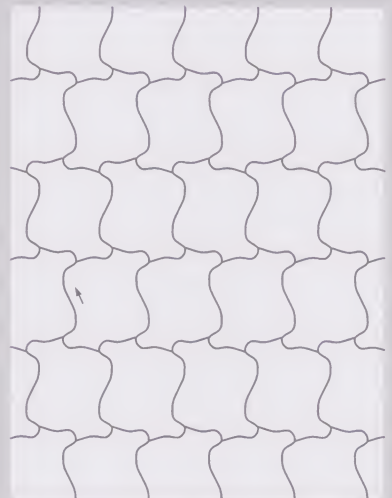
IH6

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ a \leftarrow e \leftarrow c \leftarrow f \rightarrow b \rightarrow d \rightarrow \end{matrix}$$


IH7

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow f \rightarrow \\ b \leftarrow a \leftarrow d \leftarrow c \leftarrow f \leftarrow e \leftarrow \end{matrix}$$


IH8

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow a \rightarrow b \rightarrow c \rightarrow \\ a \leftarrow b \leftarrow c \leftarrow a \leftarrow b \leftarrow c \leftarrow \end{matrix}$$


IH9

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow a \rightarrow b \rightarrow c \rightarrow \\ a \leftarrow c \rightarrow b \rightarrow a \leftarrow c \rightarrow b \rightarrow \end{matrix}$$

M336 TILING CARD 5 SIDE 2

Tile type [3,3,3,3,3,3]



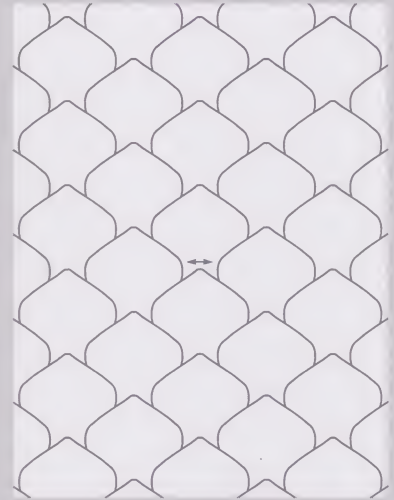
IH10

$a \rightarrow b \rightarrow a \rightarrow b \rightarrow a \rightarrow b \rightarrow$
 $b \leftarrow a \leftarrow b \leftarrow a \leftarrow b \leftarrow a \leftarrow$



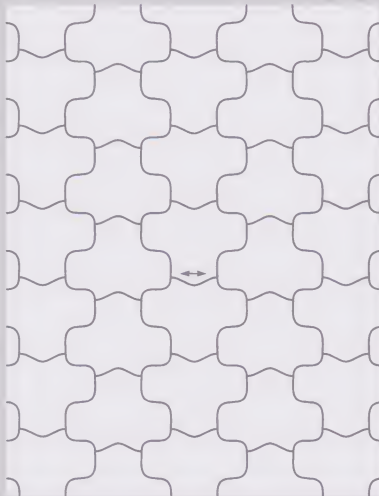
IH11

$a \rightarrow a \rightarrow a \rightarrow a \rightarrow a \rightarrow a \rightarrow$
 $a \leftarrow a \leftarrow a \leftarrow a \leftarrow a \leftarrow a \leftarrow$



IH12

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow c \leftarrow b \leftarrow$
 $d \leftarrow c \leftarrow b \leftarrow a \leftarrow b \leftarrow c \leftarrow$



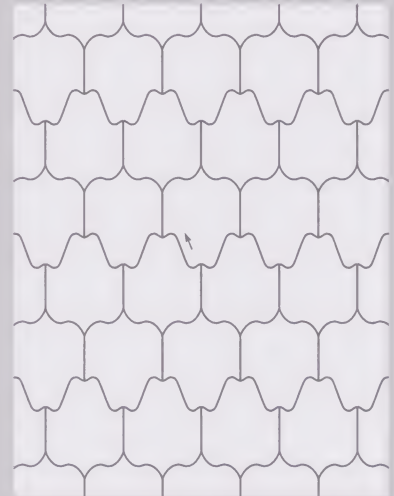
IH13

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow c \leftarrow b \leftarrow$
 $d \leftarrow b \leftarrow c \leftarrow a \leftarrow c \rightarrow b \rightarrow$



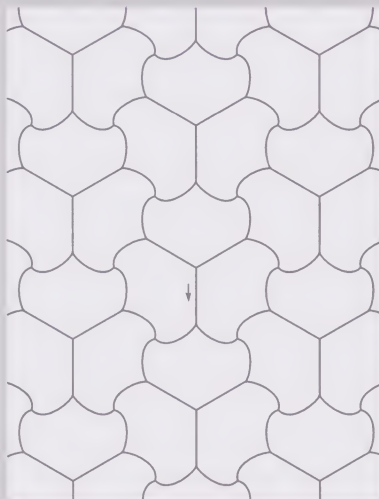
IH14

$a \rightarrow b \rightarrow c \rightarrow c \leftarrow b \leftarrow a \leftarrow$
 $c \rightarrow b \rightarrow a \rightarrow a \leftarrow b \leftarrow c \leftarrow$



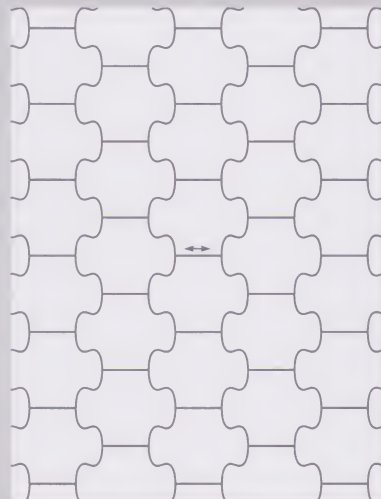
IH15

$a \rightarrow b \rightarrow c \rightarrow c \leftarrow b \leftarrow a \leftarrow$
 $a \leftarrow b \leftarrow c \leftarrow c \rightarrow b \rightarrow a \rightarrow$



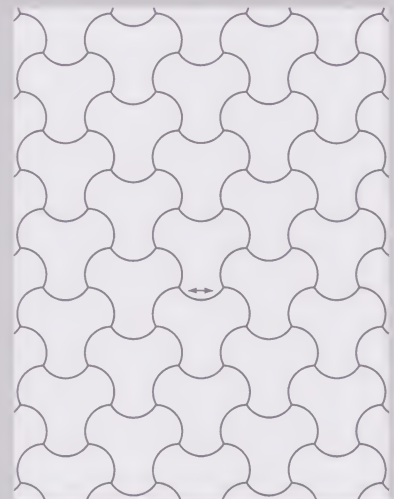
IH16

$a \rightarrow b \rightarrow c \rightarrow c \leftarrow b \leftarrow a \leftarrow$
 $a \rightarrow c \leftarrow b \leftarrow b \rightarrow c \rightarrow a \rightarrow$



IH17

$a \rightarrow b \rightarrow b \leftarrow a \rightarrow b \rightarrow b \leftarrow$
 $a \rightarrow b \leftarrow b \rightarrow a \rightarrow b \leftarrow b \rightarrow$

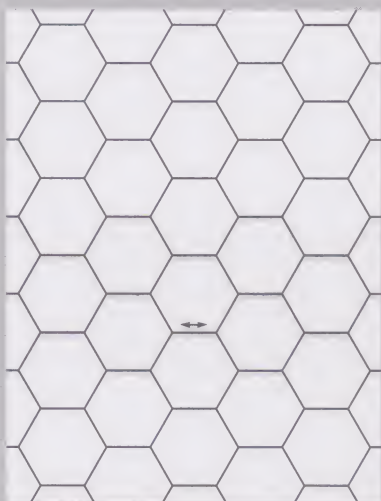


IH18

$a \rightarrow b \rightarrow a \rightarrow b \rightarrow a \rightarrow b \rightarrow$
 $b \leftarrow a \leftarrow b \leftarrow a \leftarrow b \leftarrow a \leftarrow$

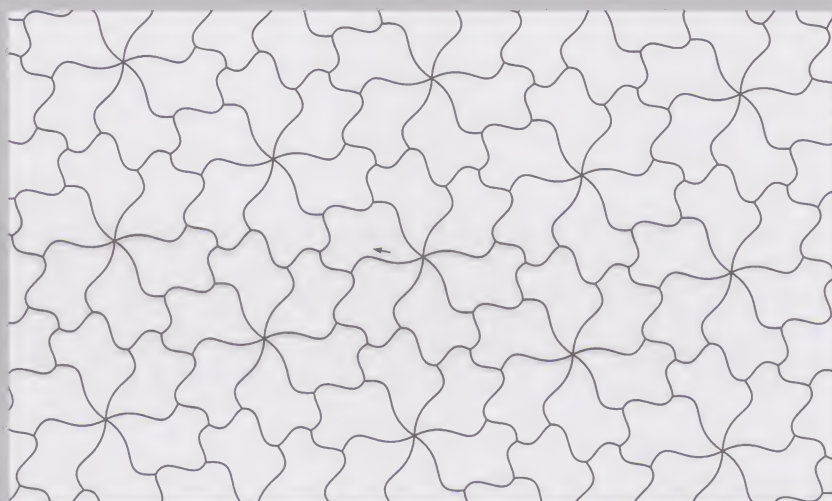
M336 TILING CARD 6 SIDE 1

Tile types $[3,3,3,3,3,3]$,
 $[3,3,3,3,6]$, $[3,3,3,4,4]$



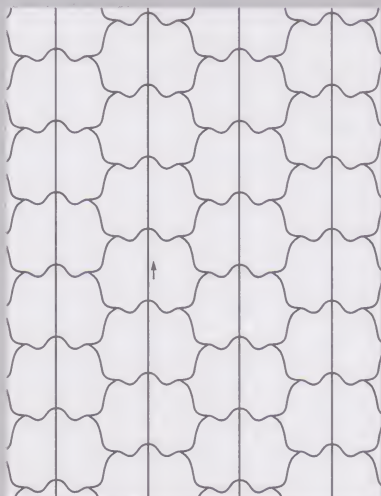
IH20

a a a a a a
a a a a a a



IH21

a[→] b[→] c[→] d[→] e[→]
e[←] c[←] b[←] d[←] a[←]



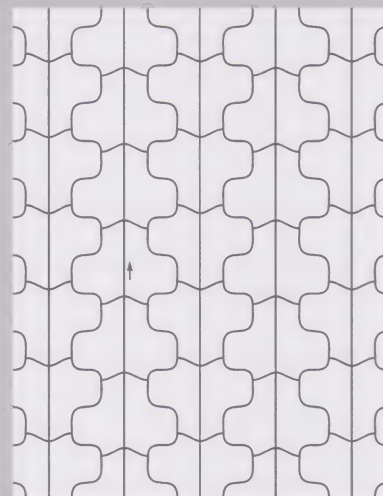
IH22

a[→] b[→] c[→] d[→] e[→]
a[→] e[←] d[→] c[→] b[←]



IH23

a[→] b[→] c[→] d[→] e[→]
a[←] e[←] c[←] d[←] b[←]



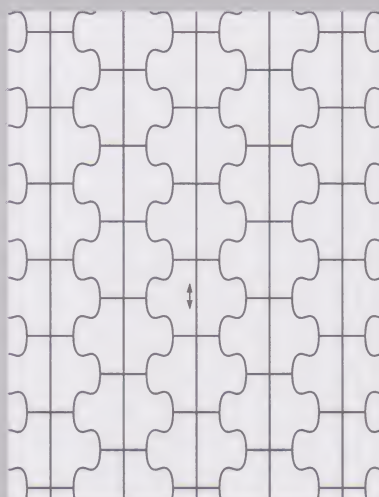
IH24

a[→] b[→] c[→] d[→] e[→]
a[→] e[←] c[←] d[←] b[←]



IH25

a[→] b[→] c[→] d[→] e[→]
a[←] e[←] d[→] c[→] b[←]



IH26

a b[→] c[→] c[←] b[←]
a b[→] c[←] c[→] b[←]

M336 TILING CARD 6 SIDE 2

Tile types $[3,3,4,3,4]$, $[3,4,6,4]$



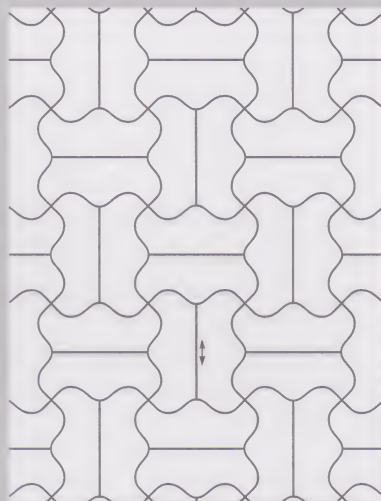
IH27

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow$
 $a \leftarrow d \rightarrow e \rightarrow b \rightarrow c \rightarrow$



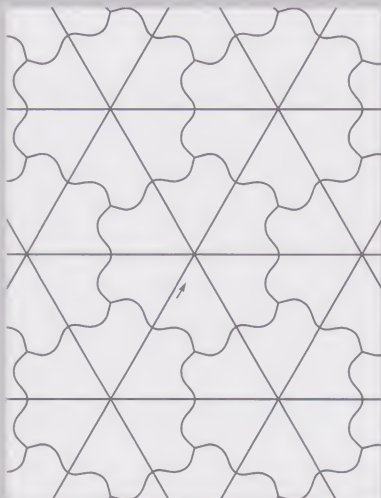
IH28

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow e \rightarrow$
 $a \leftarrow c \leftarrow b \leftarrow e \leftarrow d \leftarrow$



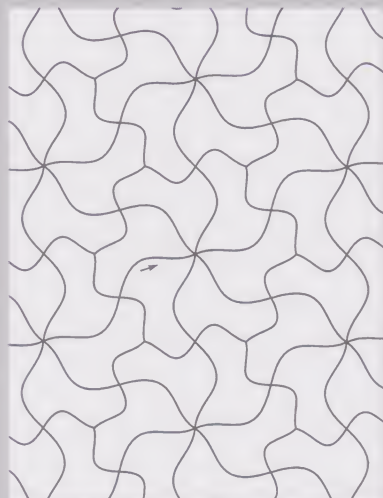
IH29

$a \rightarrow b \rightarrow c \rightarrow c \leftarrow b \leftarrow$
 $a \leftarrow c \leftarrow b \rightarrow b \rightarrow c \rightarrow$



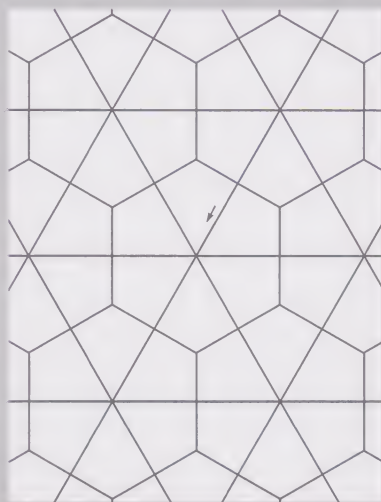
IH30

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $a \rightarrow b \rightarrow d \leftarrow c \leftarrow$



IH31

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $b \leftarrow a \leftarrow d \leftarrow c \leftarrow$

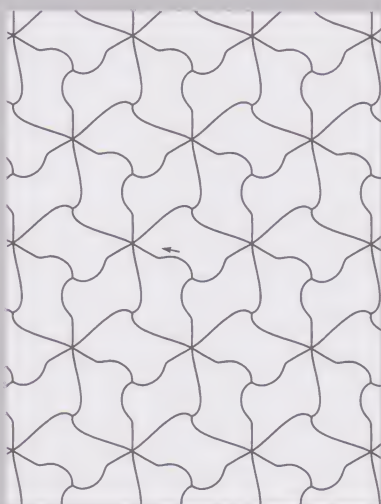


IH32

$a \rightarrow a \leftarrow b \rightarrow b \leftarrow$
 $a \rightarrow a \leftarrow b \rightarrow b \leftarrow$

M336 TILING CARD 7 SIDE 1

Tile types [3,6,3,6], [3,12,12]



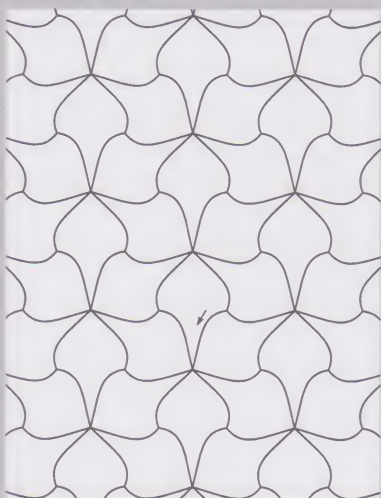
IH33

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $d \leftarrow c \leftarrow b \leftarrow a \leftarrow$



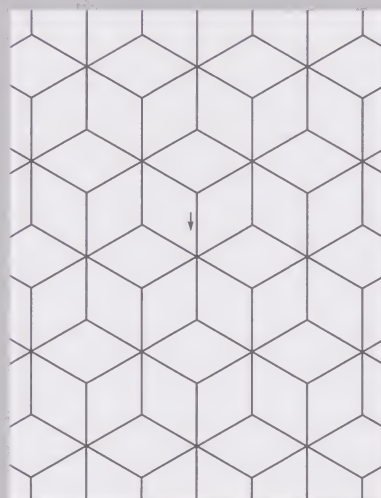
IH34

$a \rightarrow b \rightarrow a \rightarrow b \rightarrow$
 $b \leftarrow a \leftarrow b \leftarrow a \leftarrow$



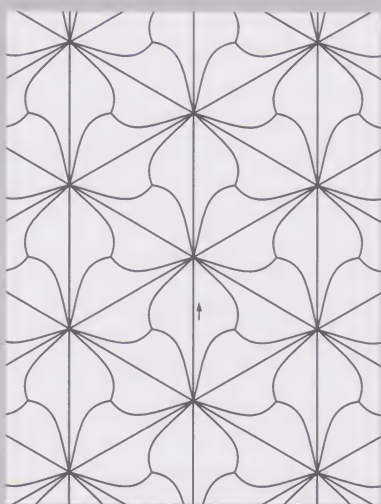
IH36

$a \rightarrow a \leftarrow b \rightarrow b \leftarrow$
 $b \rightarrow b \leftarrow a \rightarrow a \leftarrow$



IH37

$a \rightarrow a \leftarrow a \rightarrow a \leftarrow$
 $a \rightarrow a \leftarrow a \rightarrow a \leftarrow$



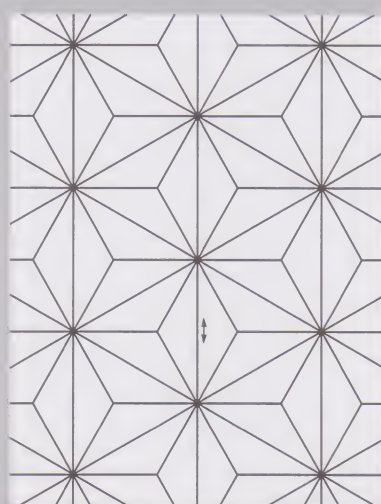
IH38

$a \rightarrow b \rightarrow c \rightarrow$
 $a \rightarrow c \leftarrow b \leftarrow$



IH39

$a \rightarrow b \rightarrow c \rightarrow$
 $a \leftarrow c \leftarrow b \leftarrow$

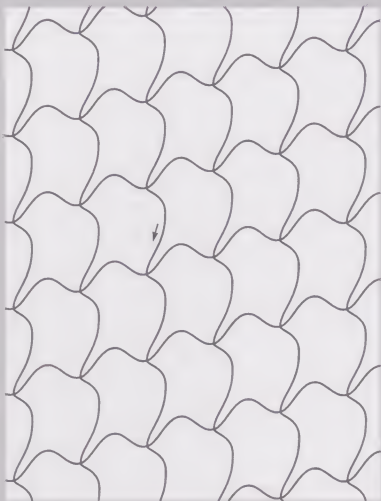


IH40

$a \rightarrow b \rightarrow b \leftarrow$
 $a \rightarrow b \rightarrow b \leftarrow$

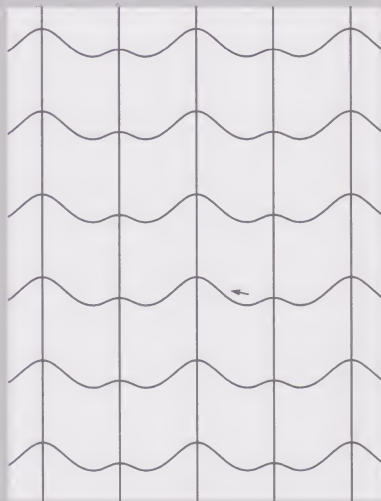
M336 TILING CARD 7 SIDE 2

Tile type [4,4,4,4]



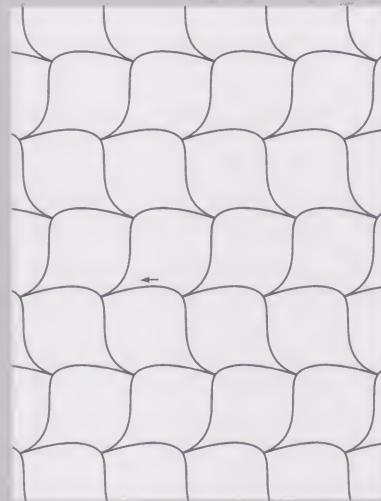
IH41

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \leftarrow d \leftarrow a \leftarrow b \leftarrow$



IH42

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \leftarrow b \leftarrow a \leftarrow d \leftarrow$



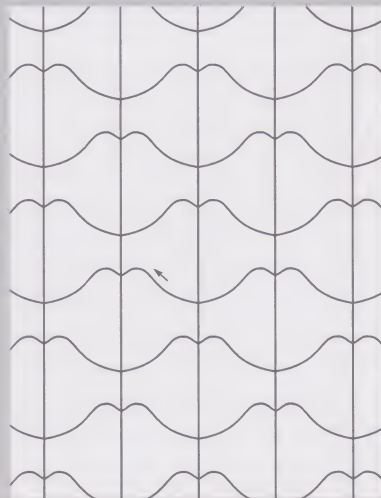
IH43

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \rightarrow d \leftarrow a \rightarrow b \leftarrow$



IH44

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $b \rightarrow a \rightarrow d \rightarrow c \rightarrow$



IH45

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \rightarrow b \rightarrow a \rightarrow d \rightarrow$



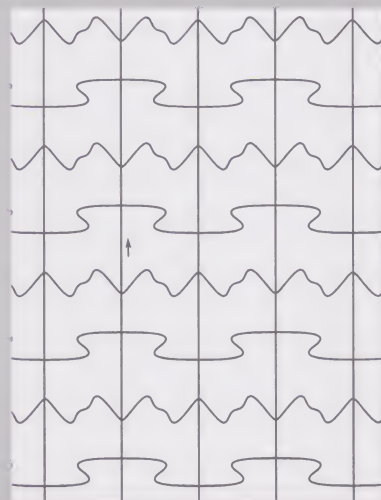
IH46

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $a \leftarrow b \leftarrow c \leftarrow d \leftarrow$



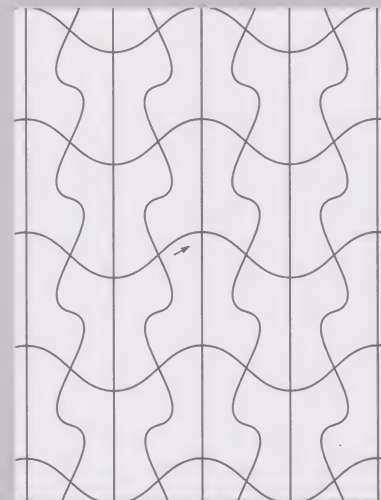
IH47

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \leftarrow b \leftarrow a \leftarrow d \leftarrow$



IH49

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $a \rightarrow b \leftarrow c \rightarrow d \leftarrow$



IH50

$a \rightarrow b \rightarrow c \rightarrow d \rightarrow$
 $c \leftarrow b \rightarrow a \leftarrow d \leftarrow$

M336 TILING CARD 8 SIDE 1

Tile type [4,4,4,4]



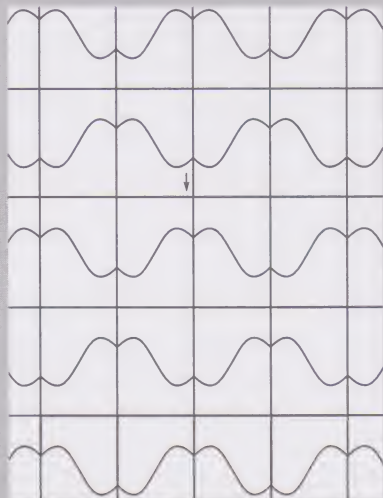
IH51

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ c \rightarrow b \leftarrow a \leftarrow d \leftarrow \end{matrix}$$


IH52

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ c \rightarrow d \leftarrow a \leftarrow b \leftarrow \end{matrix}$$

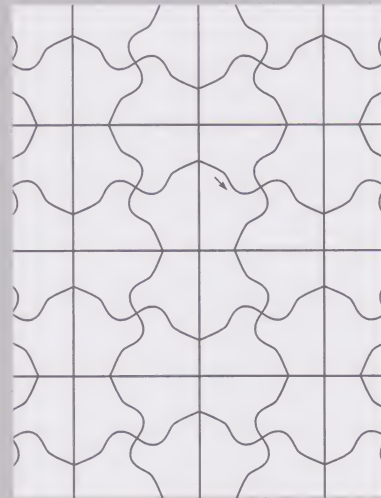

IH53

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ b \rightarrow a \leftarrow c \leftarrow d \leftarrow \end{matrix}$$


IH54

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ a \rightarrow b \leftarrow c \leftarrow d \leftarrow \end{matrix}$$


IH55

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ b \leftarrow a \leftarrow d \leftarrow c \leftarrow \end{matrix}$$


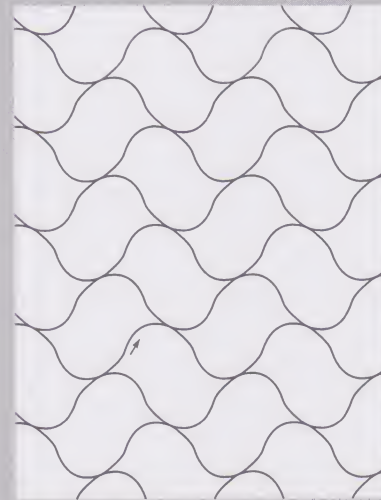
IH56

$$\begin{matrix} a \rightarrow b \rightarrow c \rightarrow d \rightarrow \\ b \leftarrow a \leftarrow c \leftarrow d \leftarrow \end{matrix}$$


IH57

$$\begin{matrix} a \rightarrow b \rightarrow a \rightarrow b \rightarrow \\ a \leftarrow b \leftarrow a \leftarrow b \leftarrow \end{matrix}$$


IH58

$$\begin{matrix} a \rightarrow b \rightarrow a \rightarrow b \rightarrow \\ a \rightarrow b \leftarrow a \leftarrow b \leftarrow \end{matrix}$$


IH59

$$\begin{matrix} a \rightarrow b \rightarrow a \rightarrow b \rightarrow \\ b \rightarrow a \leftarrow b \rightarrow a \leftarrow \end{matrix}$$

M336 TILING CARD 8 SIDE 2

Tile type [4,4,4,4]



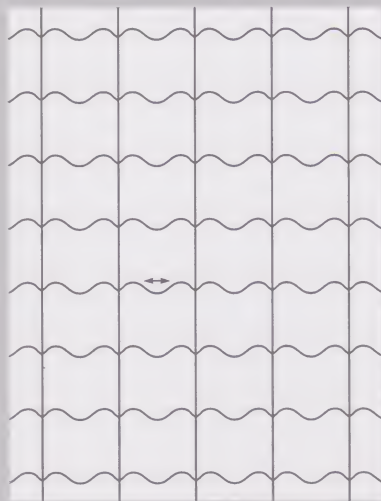
IH61

$a \rightarrow b \rightarrow a \rightarrow b$
 $b \leftarrow a \leftarrow b \leftarrow a$



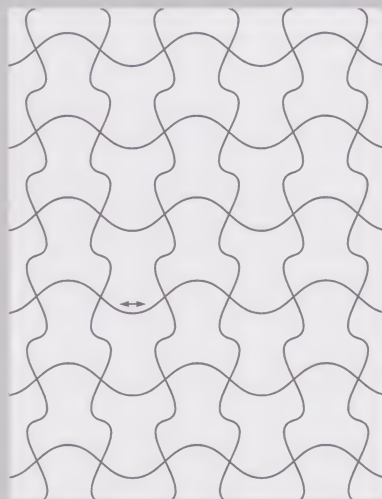
IH62

$a \rightarrow a \rightarrow a \rightarrow a$
 $a \leftarrow a \leftarrow a \leftarrow a$



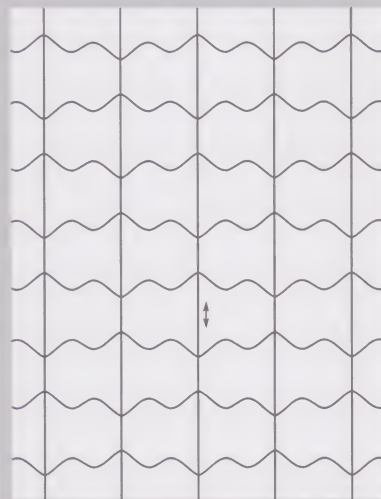
IH63

$a \rightarrow b \rightarrow c \rightarrow b$
 $c \rightarrow b \rightarrow a \rightarrow b$



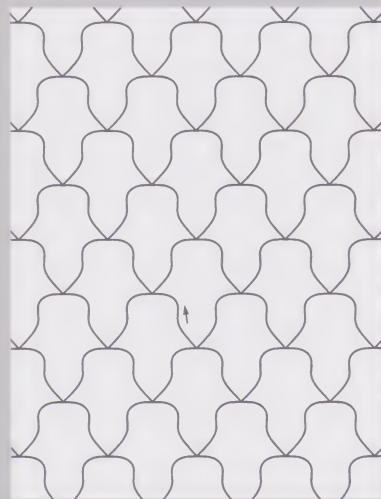
IH66

$a \rightarrow b \rightarrow c \rightarrow b$
 $c \rightarrow b \rightarrow a \rightarrow b$



IH67

$a \rightarrow b \rightarrow c \rightarrow b$
 $a \rightarrow b \rightarrow c \rightarrow b$



IH68

$a \rightarrow b \rightarrow b \rightarrow a$
 $b \rightarrow a \rightarrow a \rightarrow b$



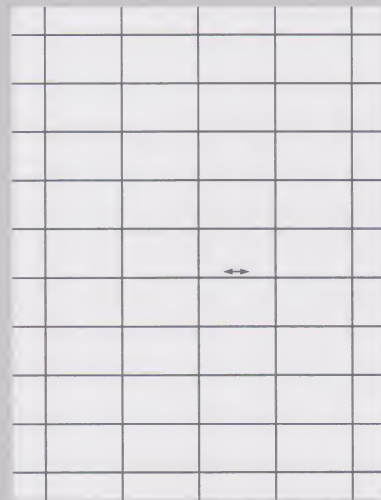
IH69

$a \rightarrow b \rightarrow b \rightarrow a$
 $a \rightarrow b \rightarrow b \rightarrow a$



IH71

$a \rightarrow b \rightarrow b \rightarrow a$
 $b \leftarrow a \leftarrow a \rightarrow b$



IH72

$a \rightarrow b \rightarrow a \rightarrow b$
 $a \rightarrow b \rightarrow a \rightarrow b$

M336 TILING CARD 9 SIDE 1

Tile types $[4,4,4,4]$, $[4,6,12]$, $[4,8,8]$



IH73

$a \ b \ a \ b$
 $b \ a \ b \ a$



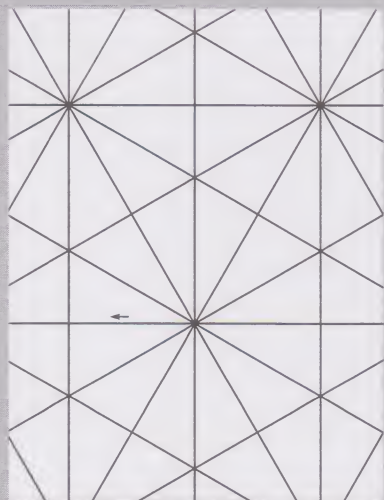
IH74

$a \rightarrow a \leftarrow a \rightarrow a \leftarrow$
 $a \leftarrow a \rightarrow a \leftarrow a \rightarrow$



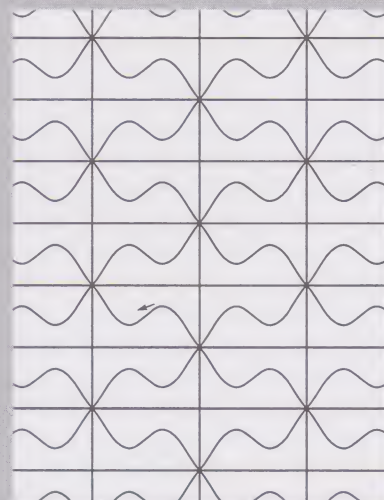
IH76

$a \ a \ a \ a$
 $a \ a \ a \ a$



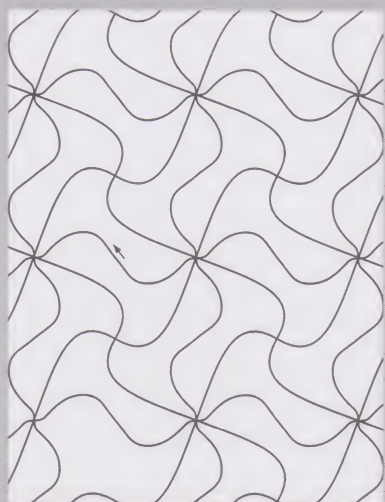
IH77

$a \rightarrow b \rightarrow c \rightarrow$
 $a \rightarrow b \rightarrow c \rightarrow$



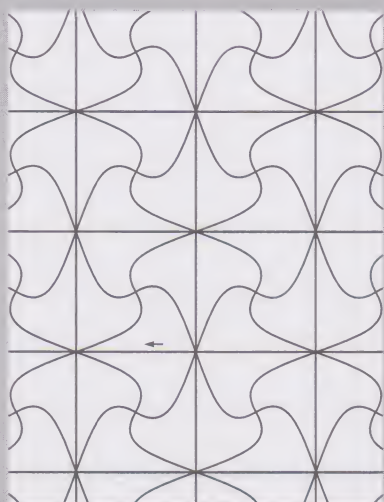
IH78

$a \rightarrow b \rightarrow c \rightarrow$
 $a \rightarrow b \rightarrow c \rightarrow$



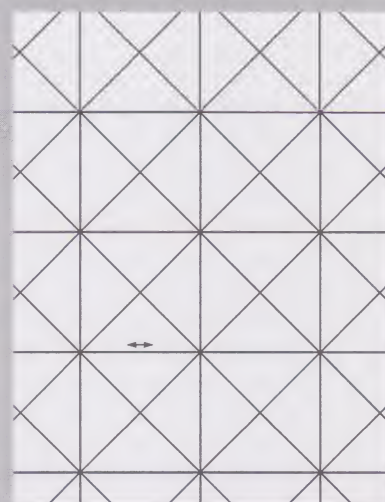
IH79

$a \rightarrow b \rightarrow c \rightarrow$
 $a \leftarrow c \leftarrow b \leftarrow$



IH81

$a \rightarrow b \rightarrow c \rightarrow$
 $a \leftarrow c \leftarrow b \leftarrow$

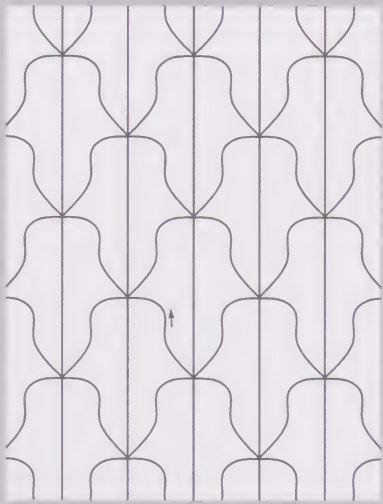


IH82

$a \ b \rightarrow b \leftarrow$
 $a \ b \rightarrow b \leftarrow$

M336 TILING CARD 9 SIDE 2

Tile type [6,6,6]



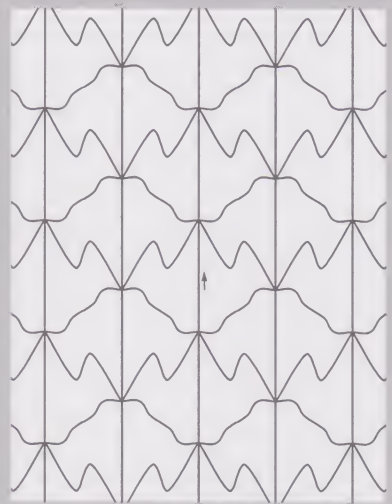
IH83

$a \rightarrow b \rightarrow c \rightarrow$
 $b \rightarrow a \rightarrow c \rightarrow$



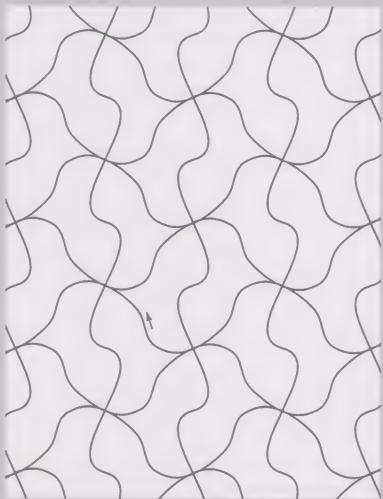
IH84

$a \rightarrow b \rightarrow c \rightarrow$
 $a \leftarrow b \leftarrow c \leftarrow$



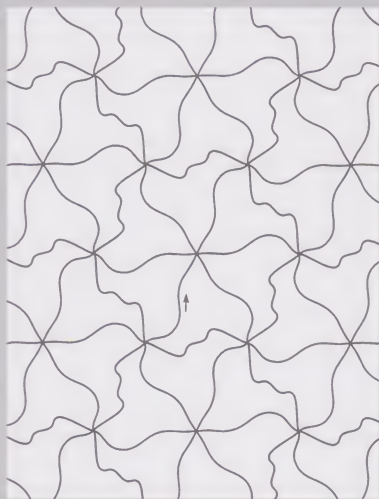
IH85

$a \rightarrow b \rightarrow c \rightarrow$
 $a \rightarrow b \leftarrow c \leftarrow$



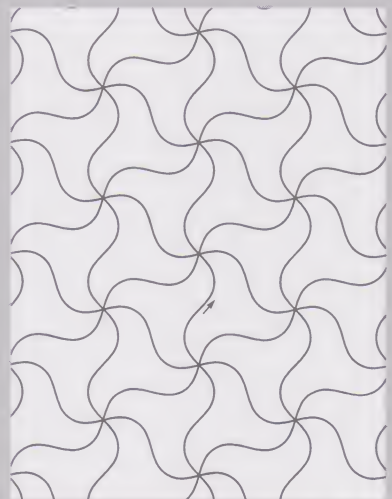
IH86

$a \rightarrow b \rightarrow c \rightarrow$
 $b \rightarrow a \rightarrow c \rightarrow$



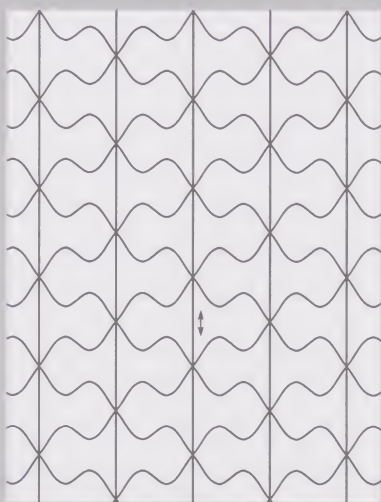
IH88

$a \rightarrow b \rightarrow c \rightarrow$
 $b \leftarrow a \leftarrow c \leftarrow$



IH90

$a \rightarrow a \rightarrow a \rightarrow$
 $a \leftarrow a \leftarrow a \leftarrow$



IH91

$a \rightarrow b \rightarrow b \leftarrow$
 $a \leftarrow b \rightarrow b \rightarrow$



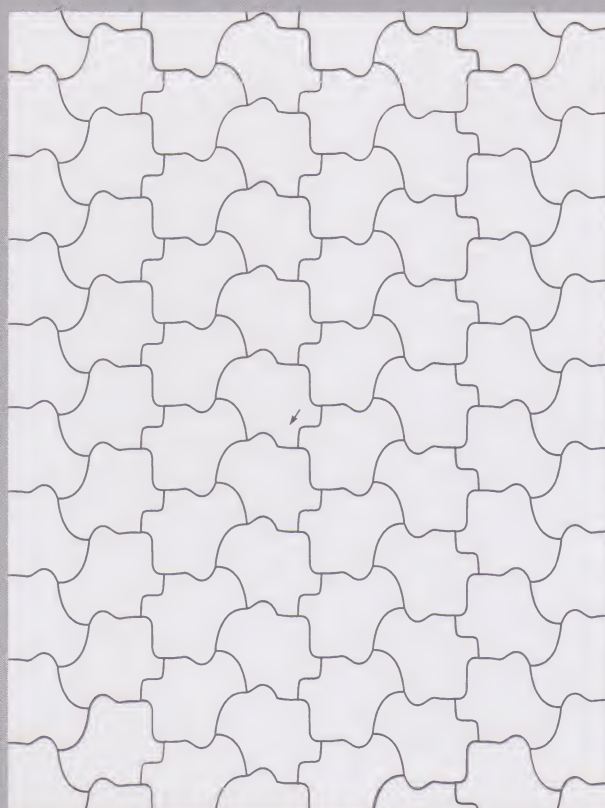
IH93

$a \rightarrow a \rightarrow a \rightarrow$
 $a \leftarrow a \leftarrow a \leftarrow$

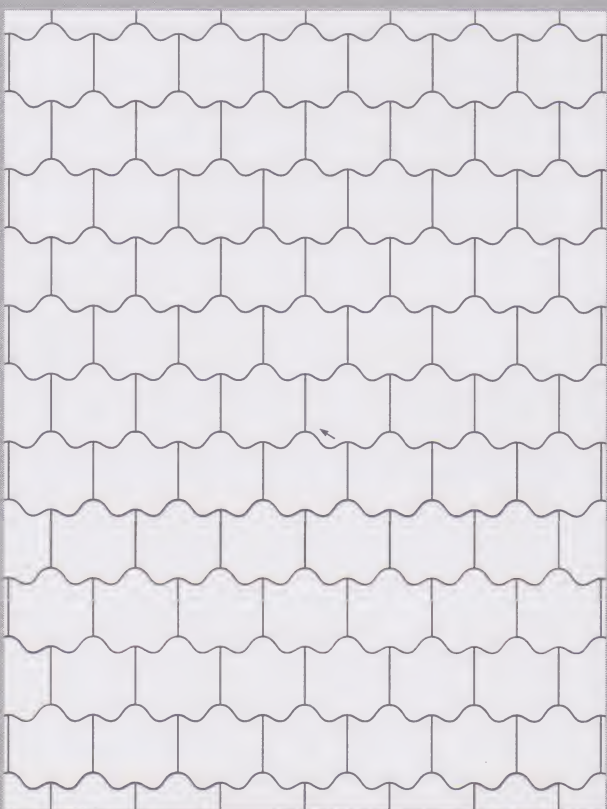
M336 TILING CARD 10 SIDE 1



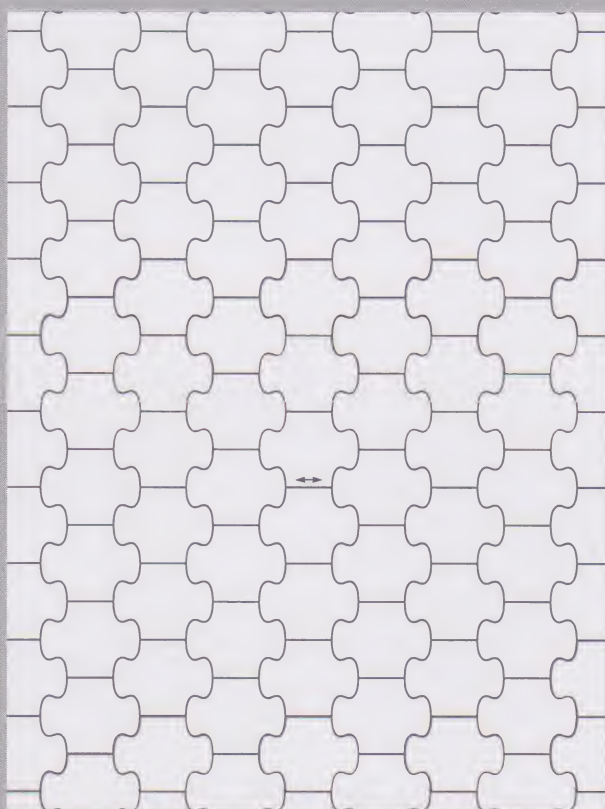
IH3



IH5



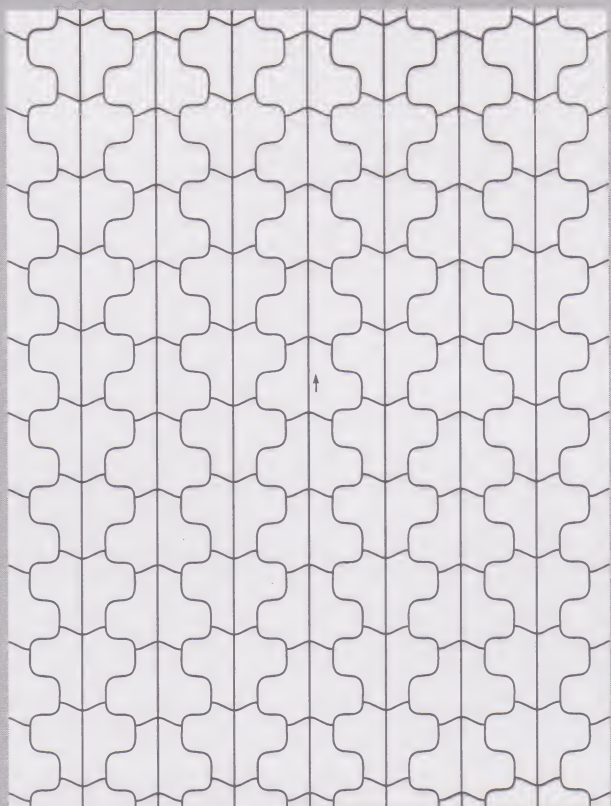
IH14



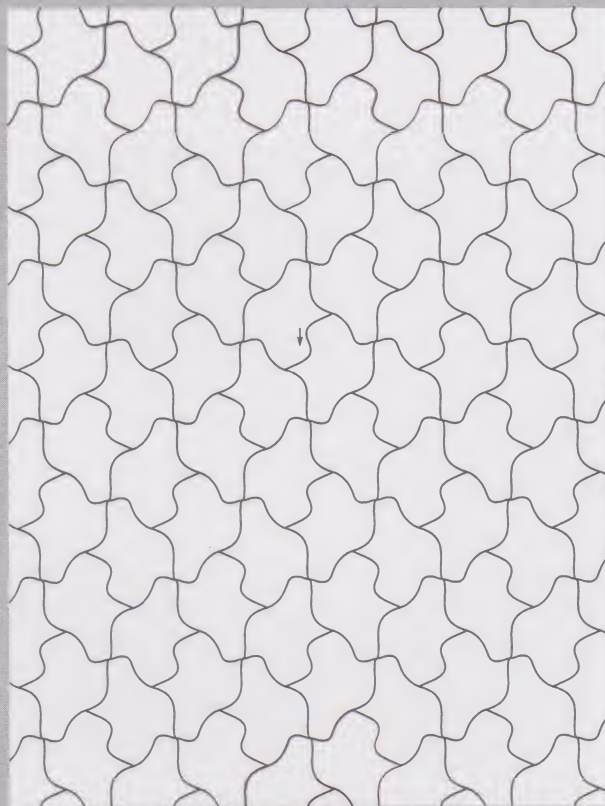
IH17

M336 TILING CARD 10

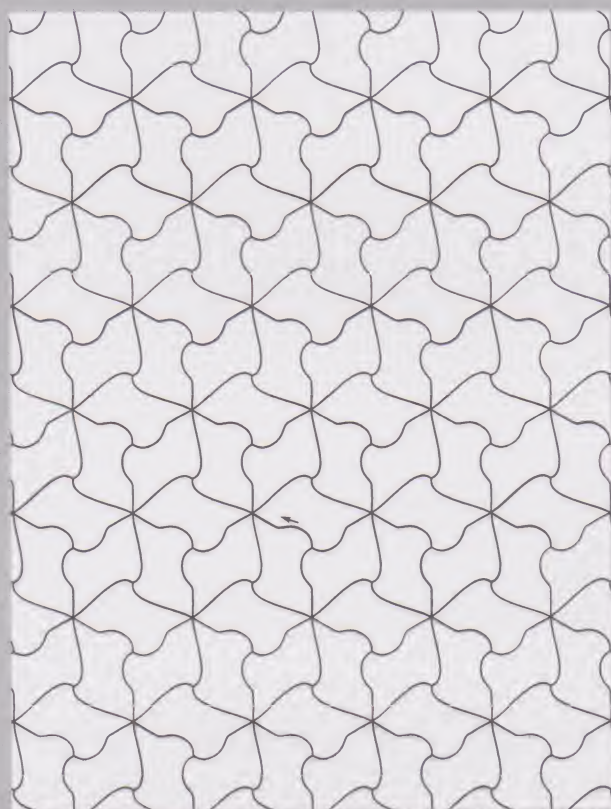
SIDE 2



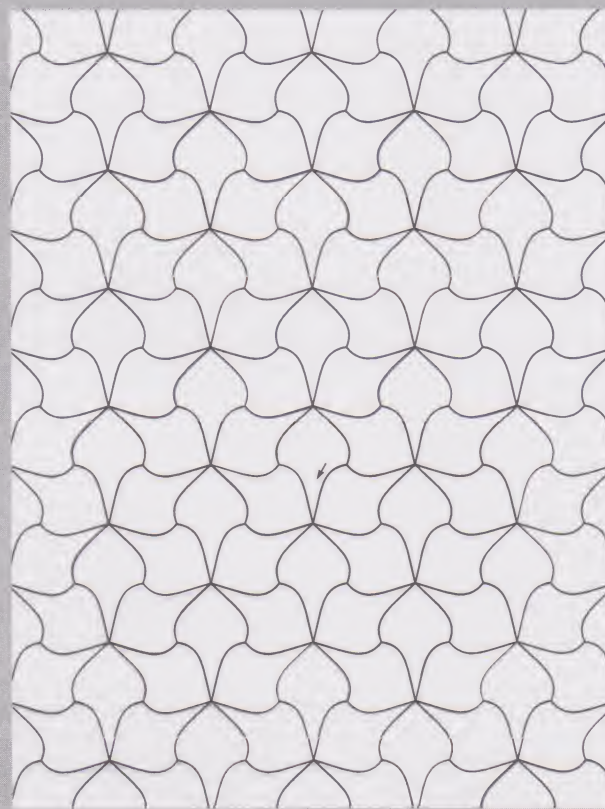
IH24



IH27

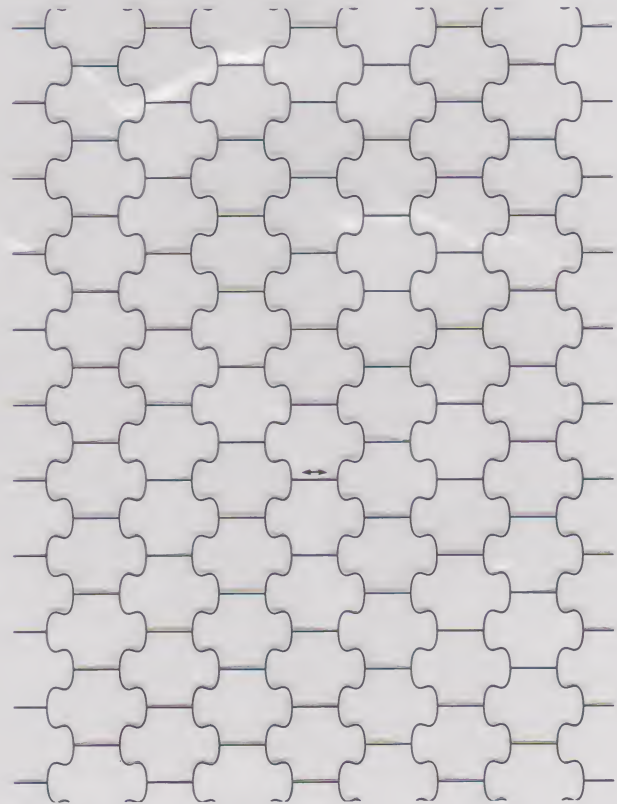
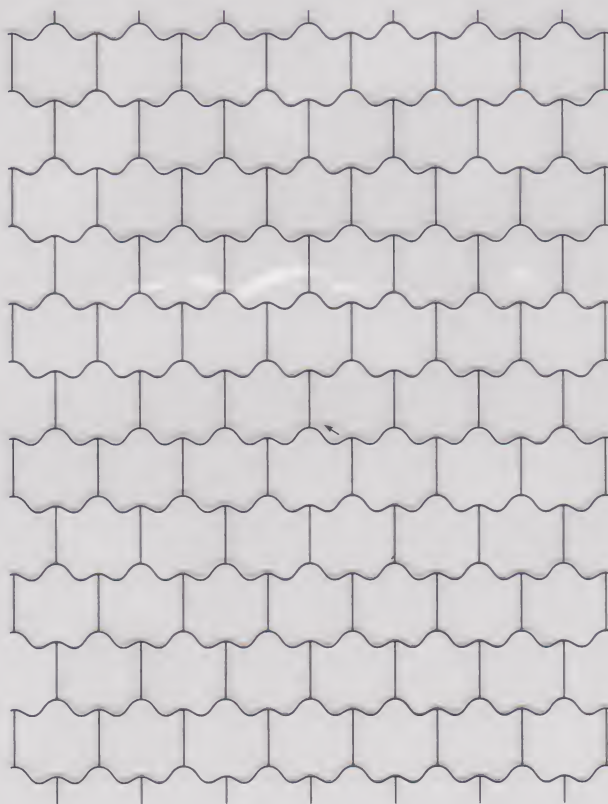
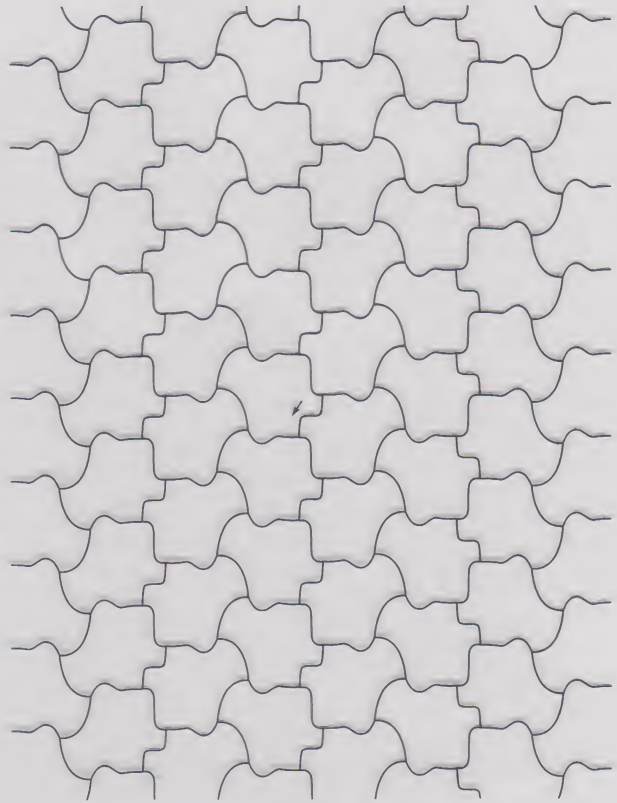
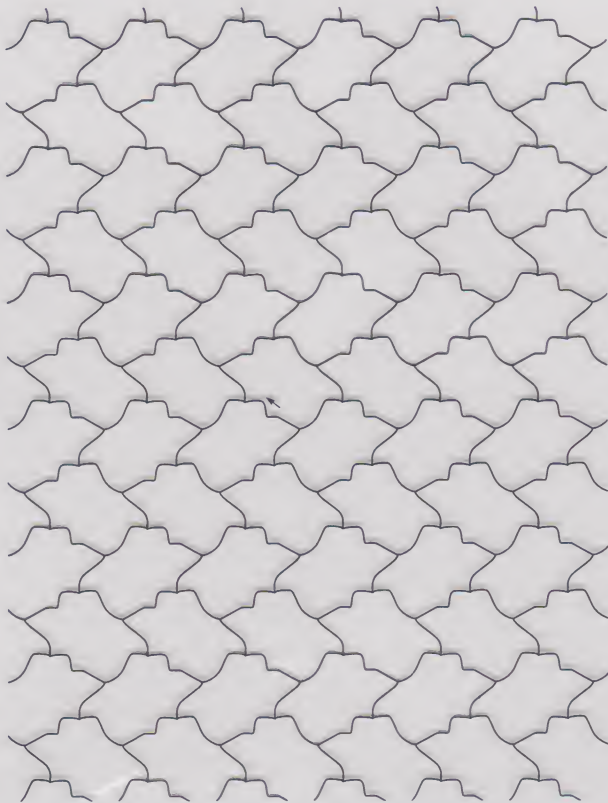


IH33

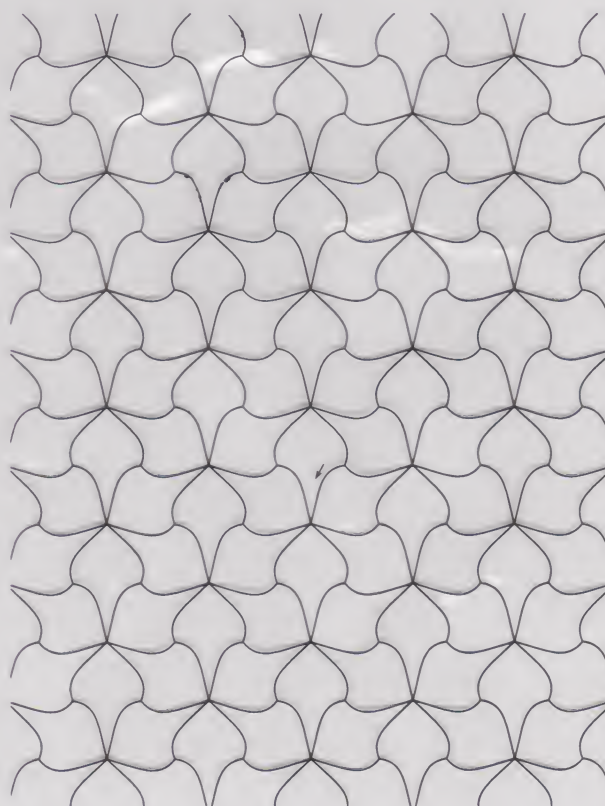
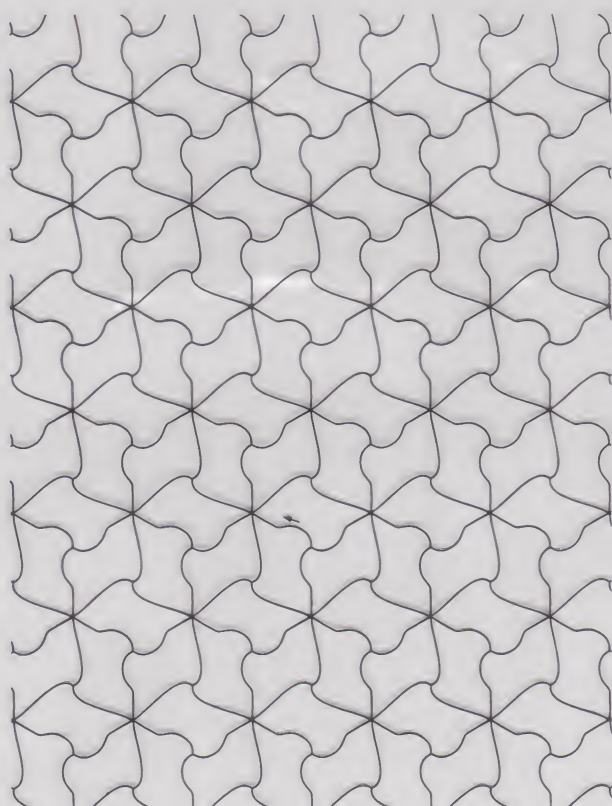
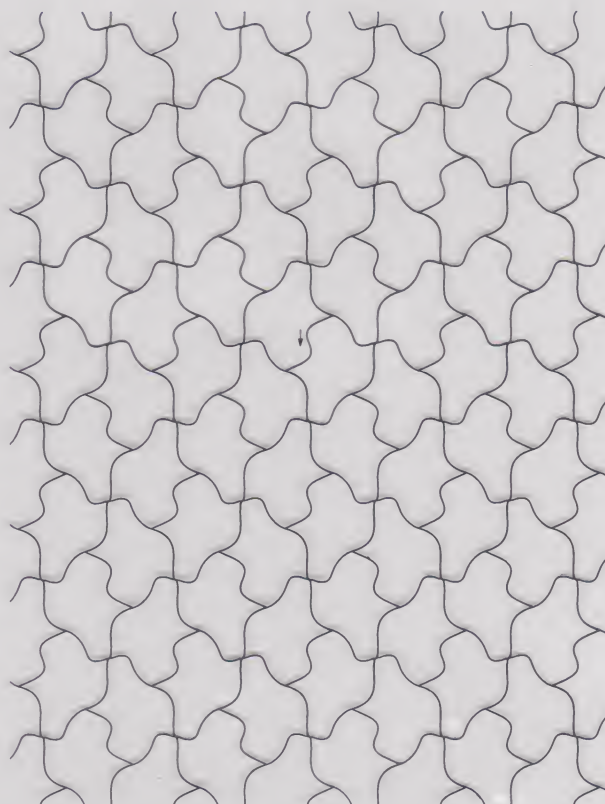
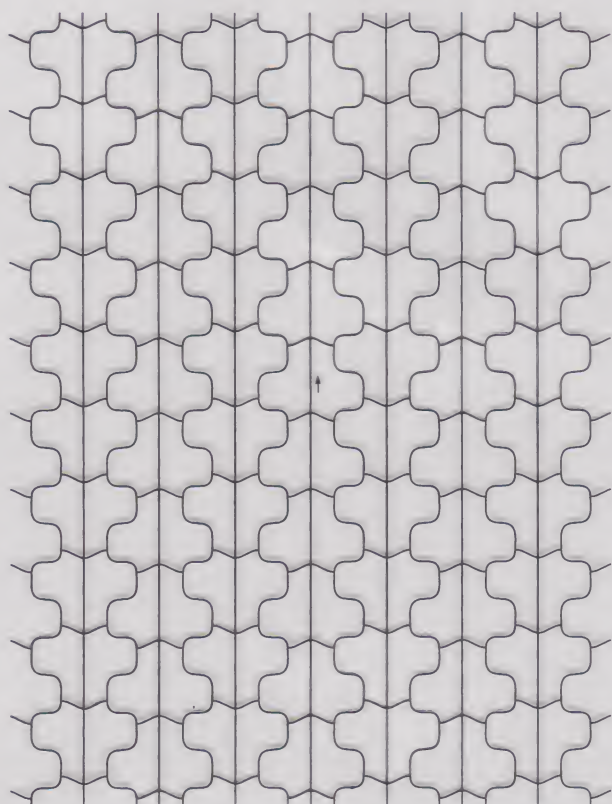


IH36

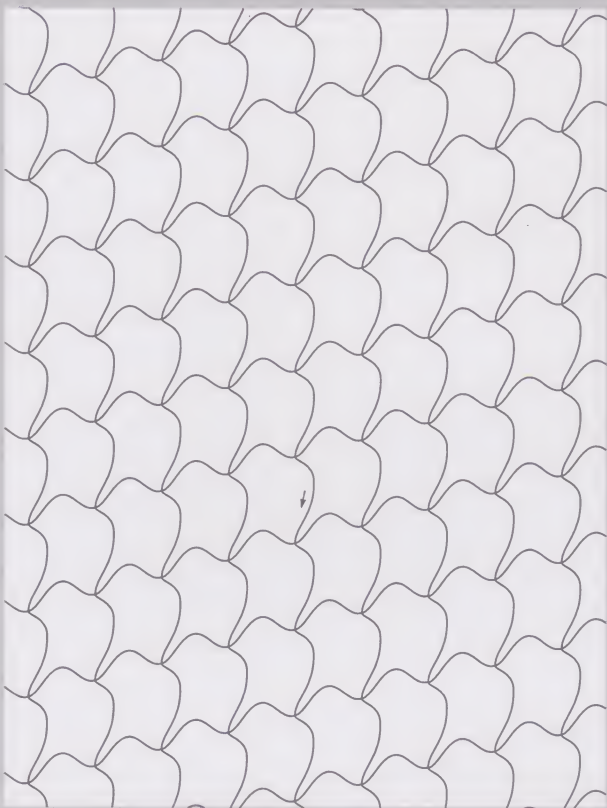
M336 TILING CARD 10 **SIDE 1 OVERLAY**



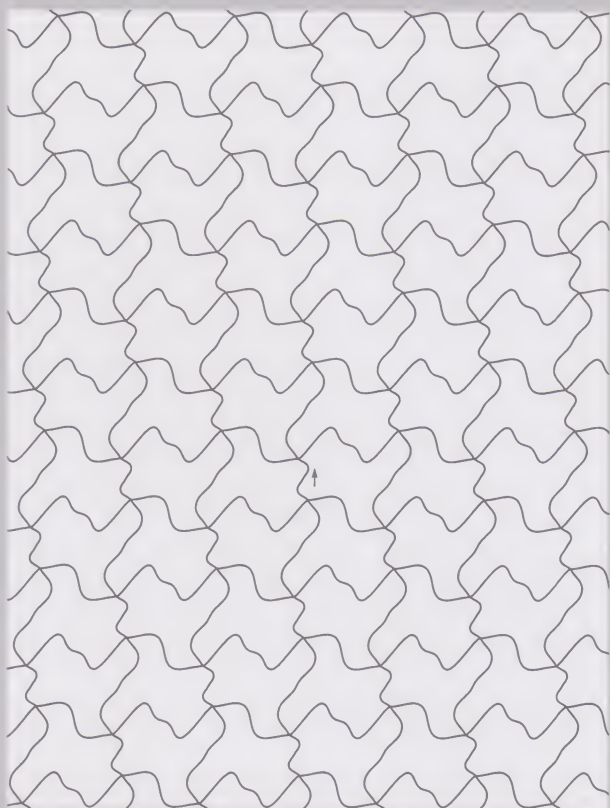
M336 TILING CARD 10 **SIDE 2 OVERLAY**



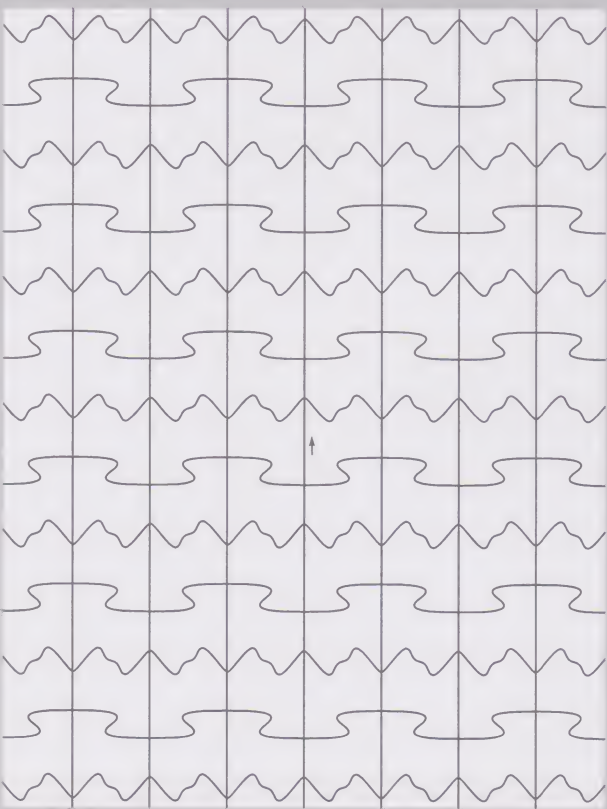
M336 TILING CARD 11 **SIDE 1**



IH41



IH46



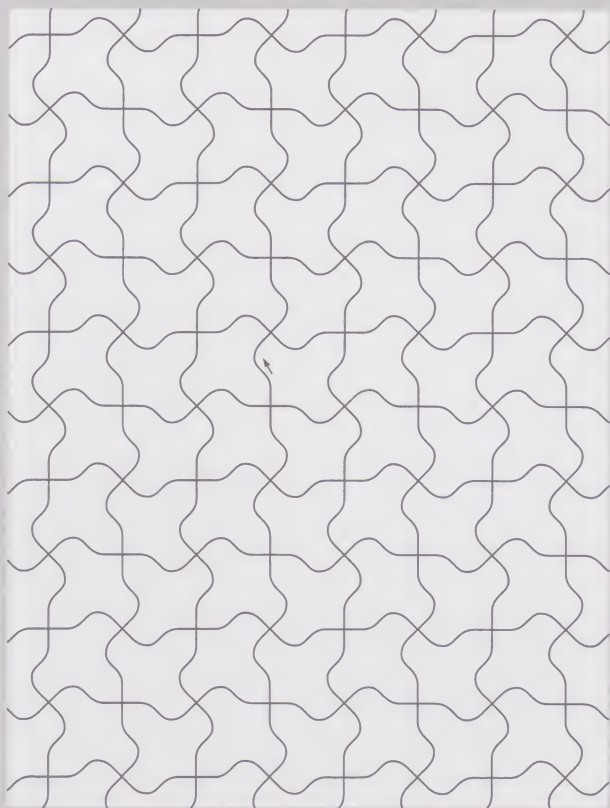
IH49



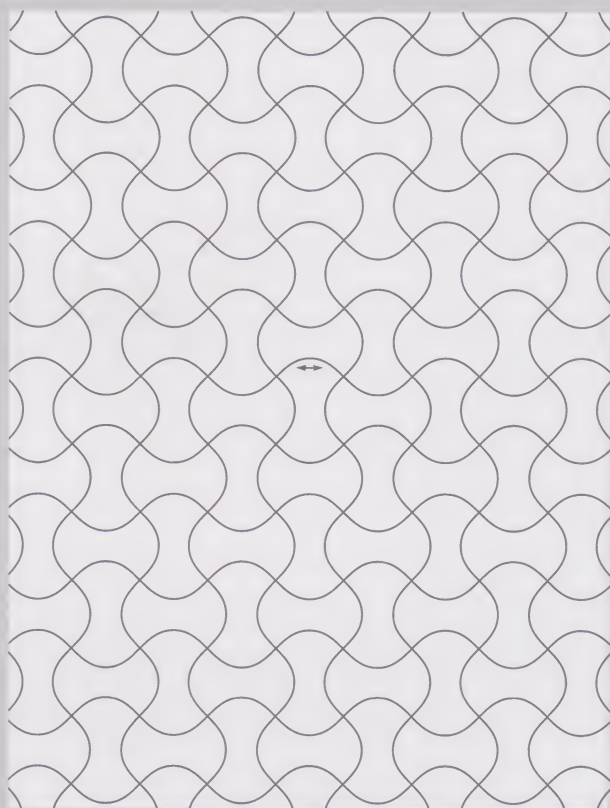
IH55

M336 TILING CARD 11

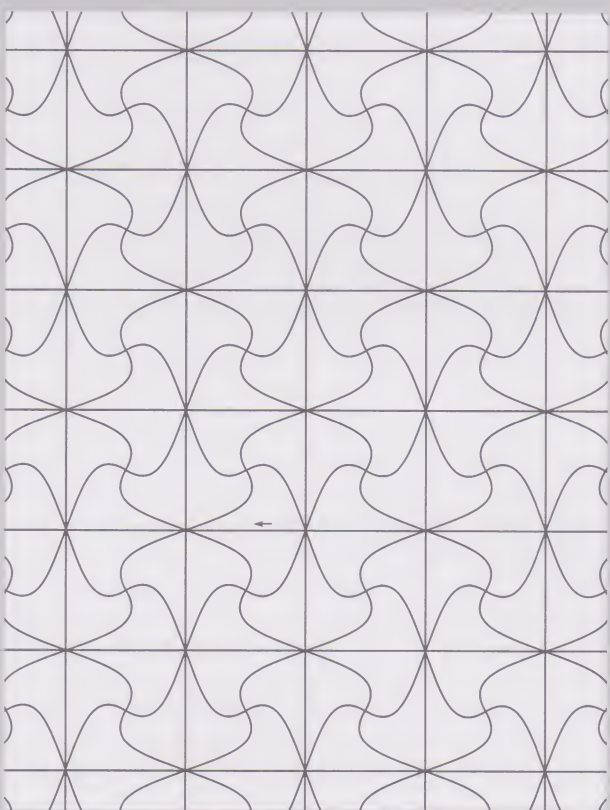
SIDE 2



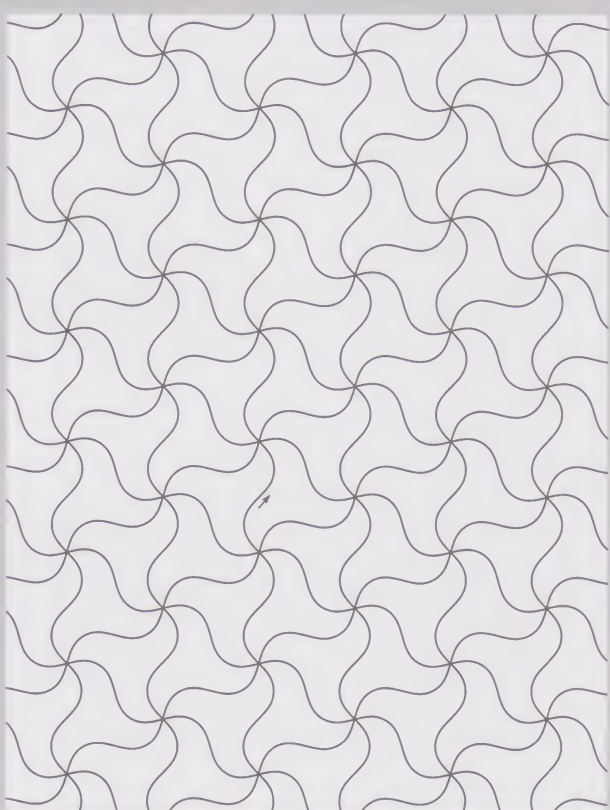
IH71



IH73



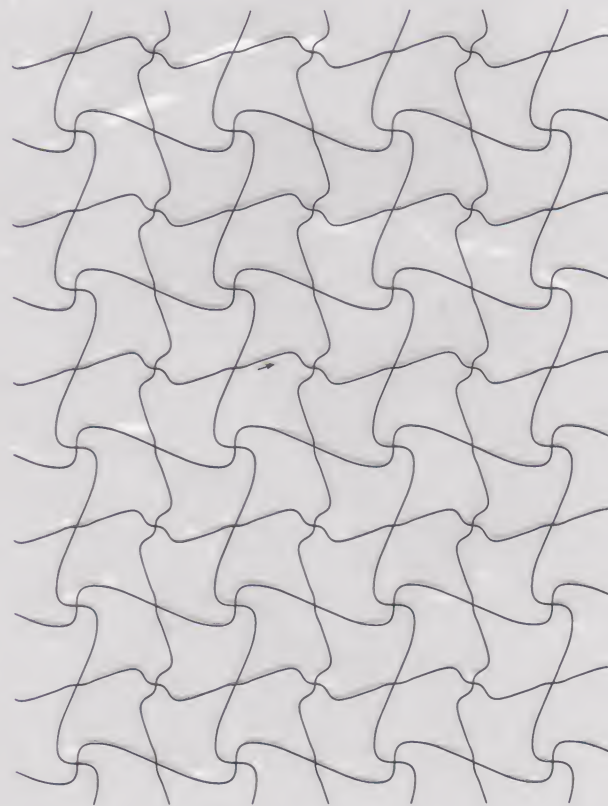
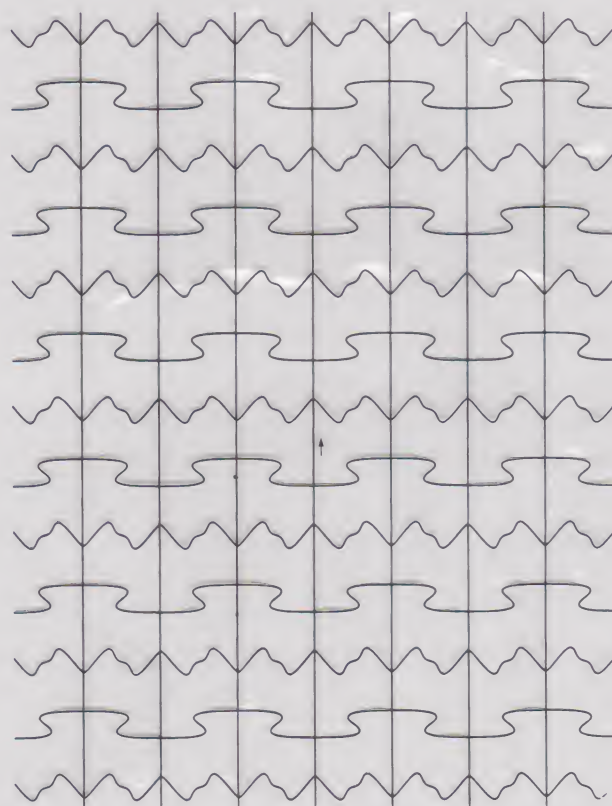
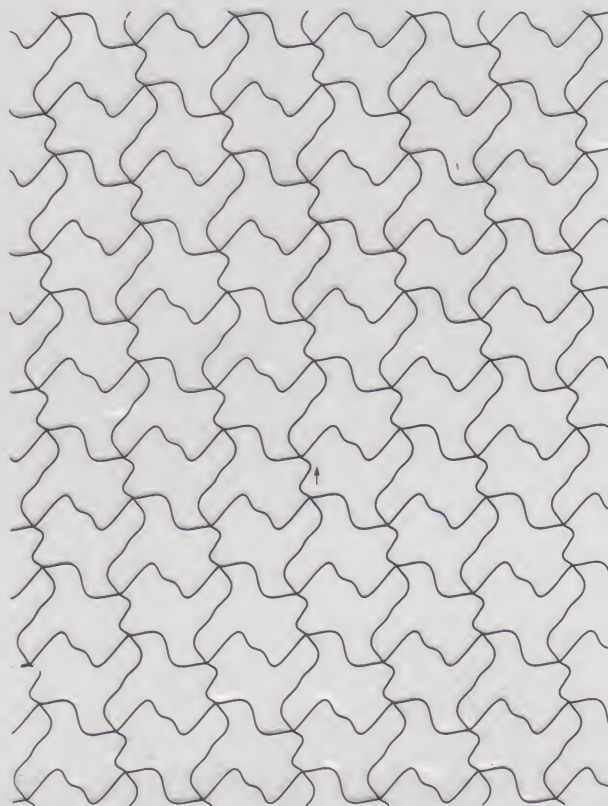
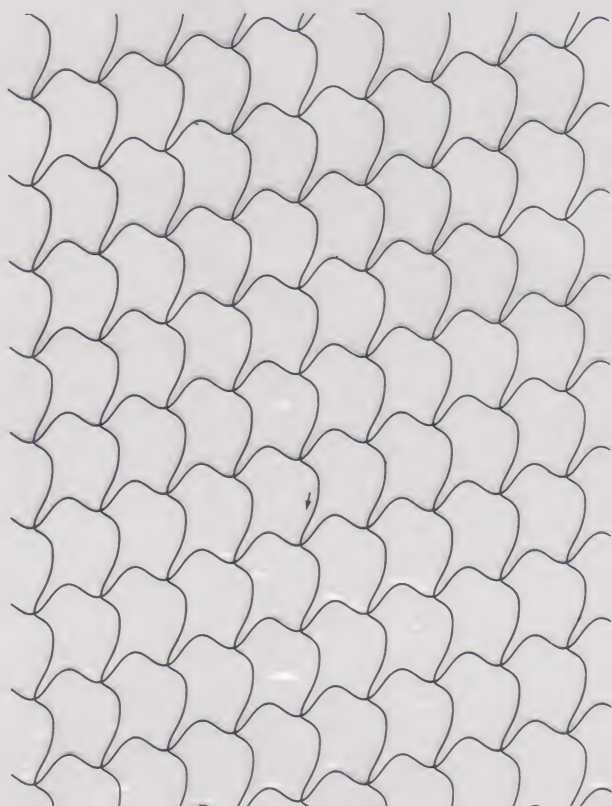
IH81



IH90

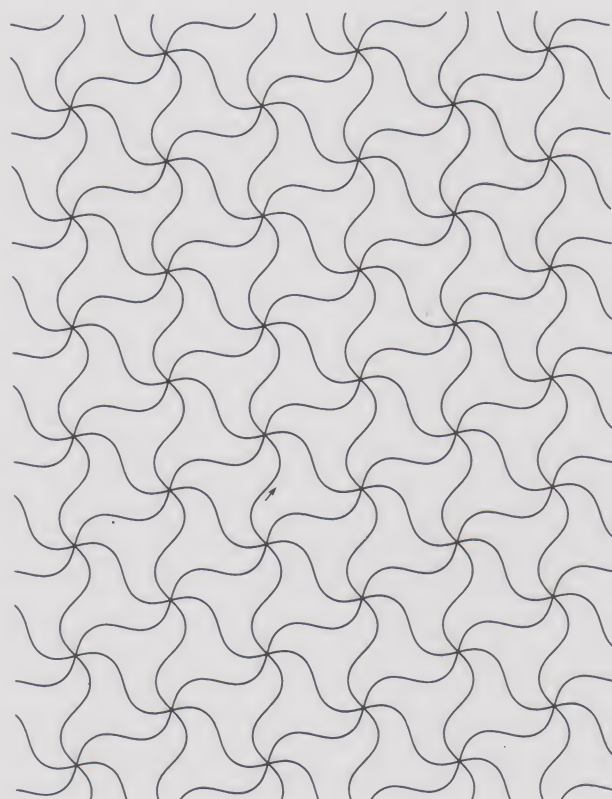
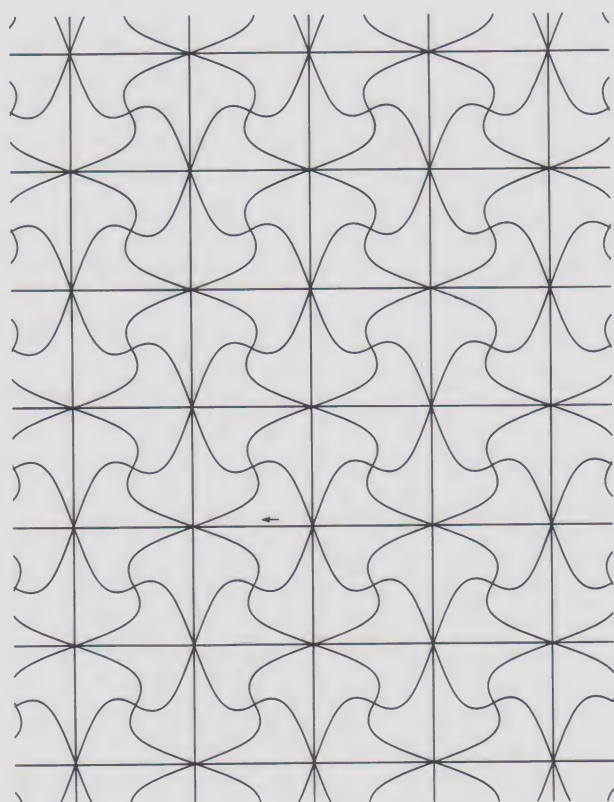
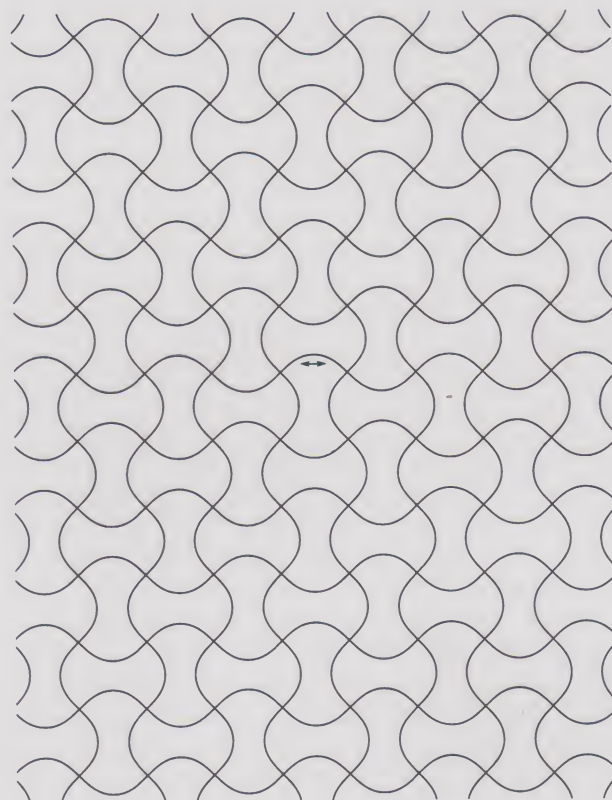
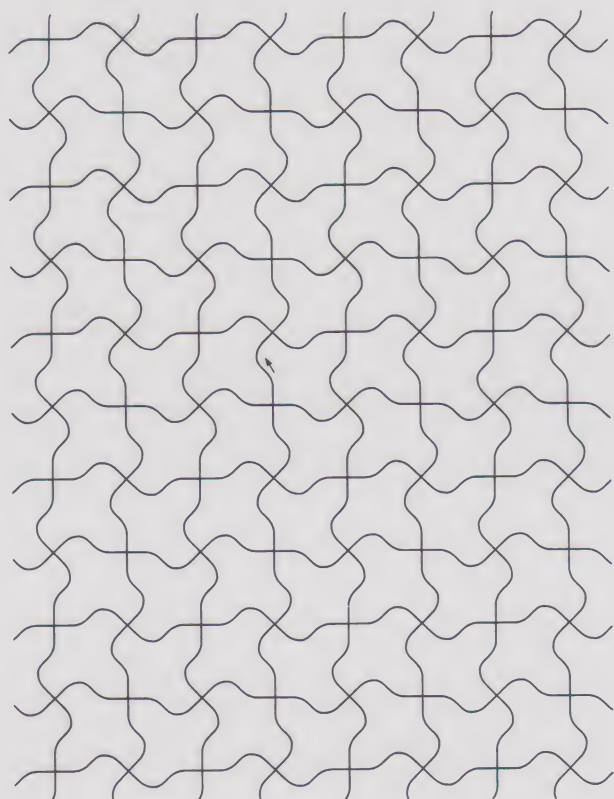
M336 TILING CARD 1 1

SIDE 1 OVERLAY

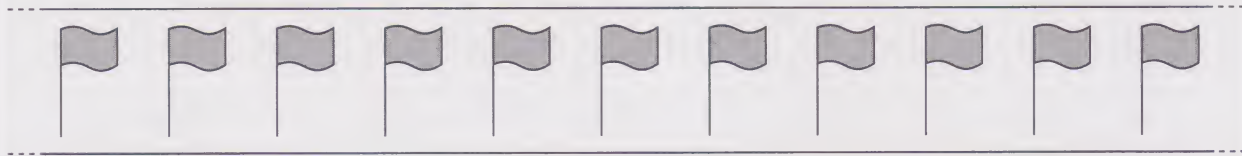


M336 TILING CARD 11

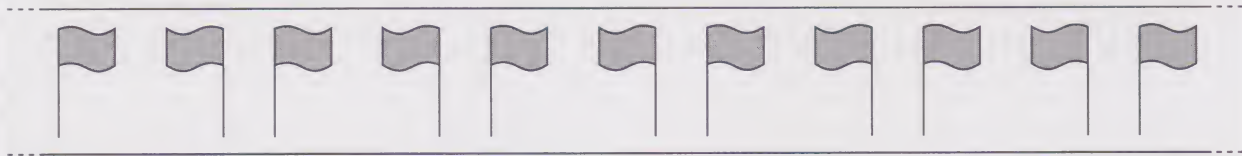
SIDE 2 OVERLAY



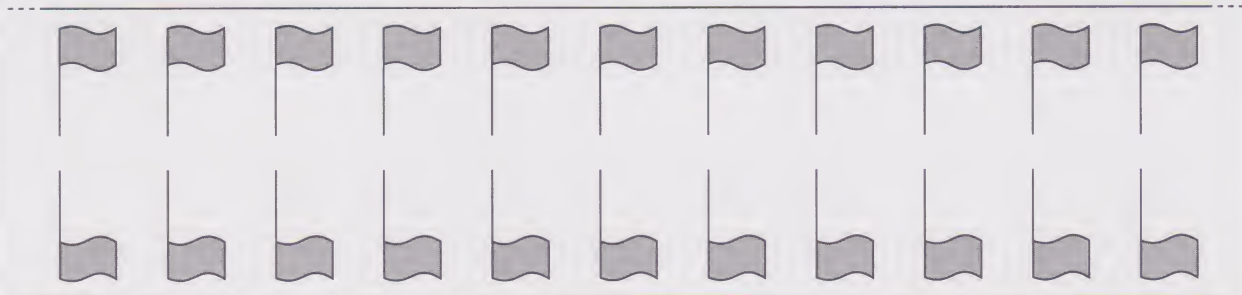
M336 FRIEZE CARD SIDE 1



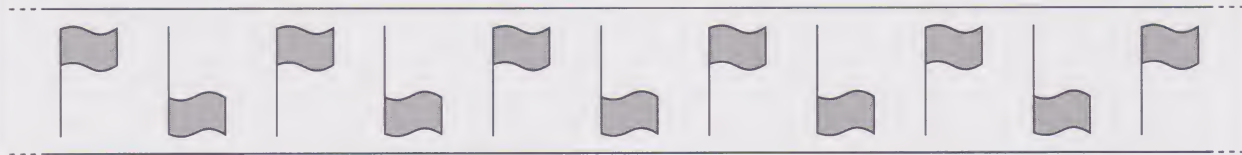
Type 1 F_1



Type 2 F_2

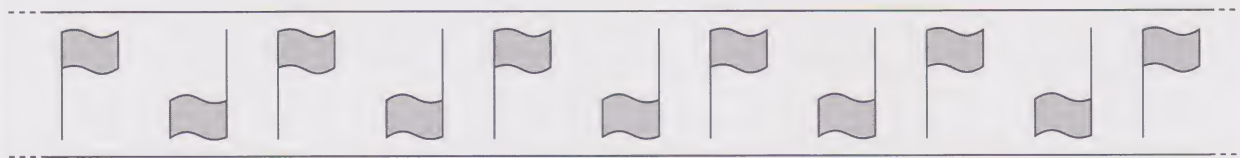


Type 3 F_3

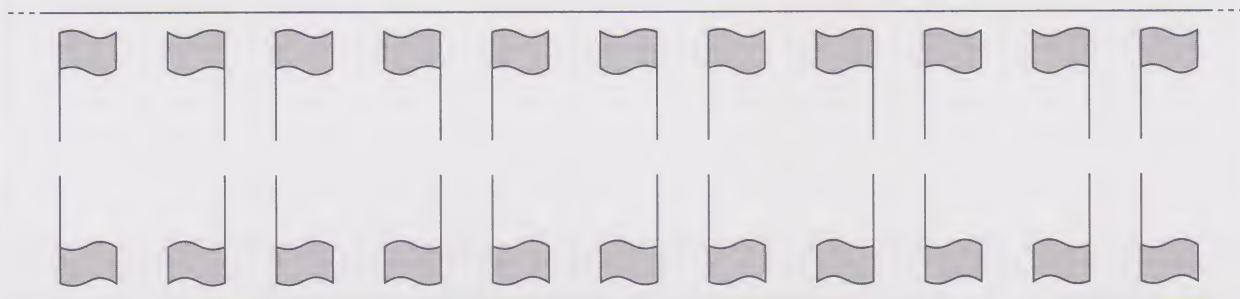


Type 4 F_4

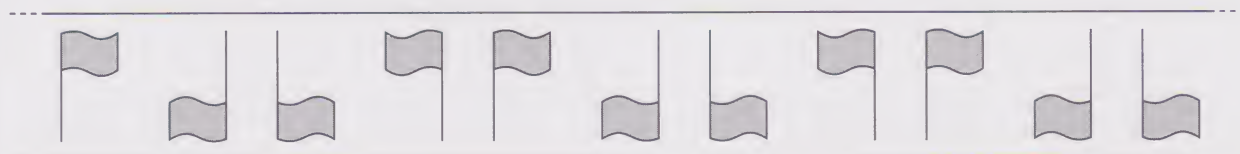
M336 FRIEZE CARD **SIDE 2**



Type 5 F_5

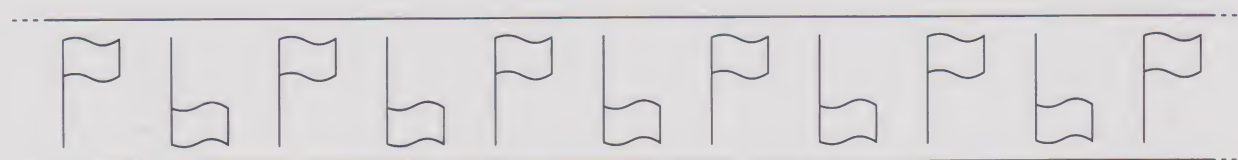
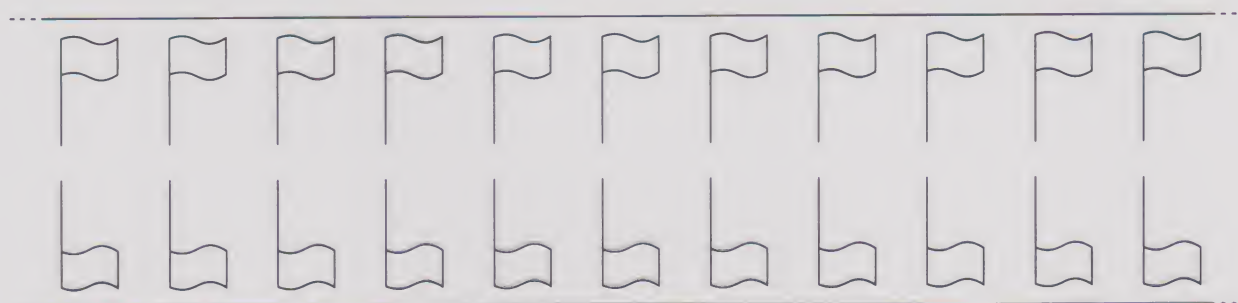
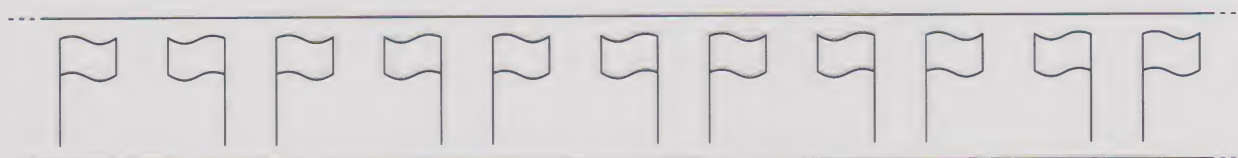
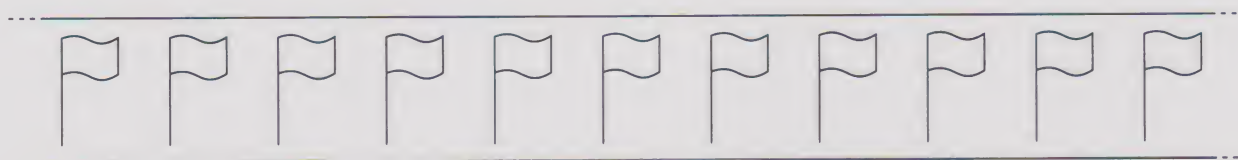


Type 6 F_6

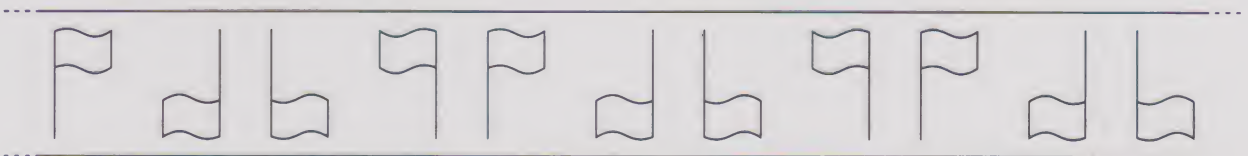
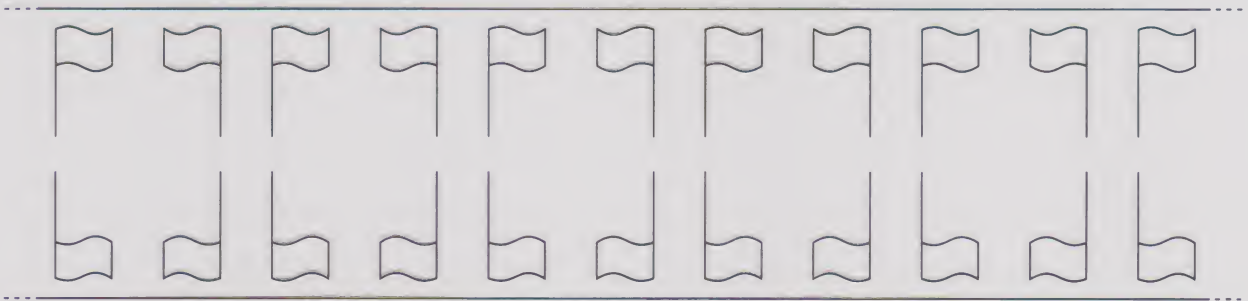
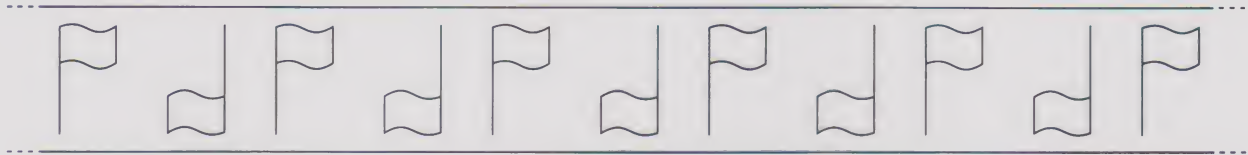


Type 7 F_7

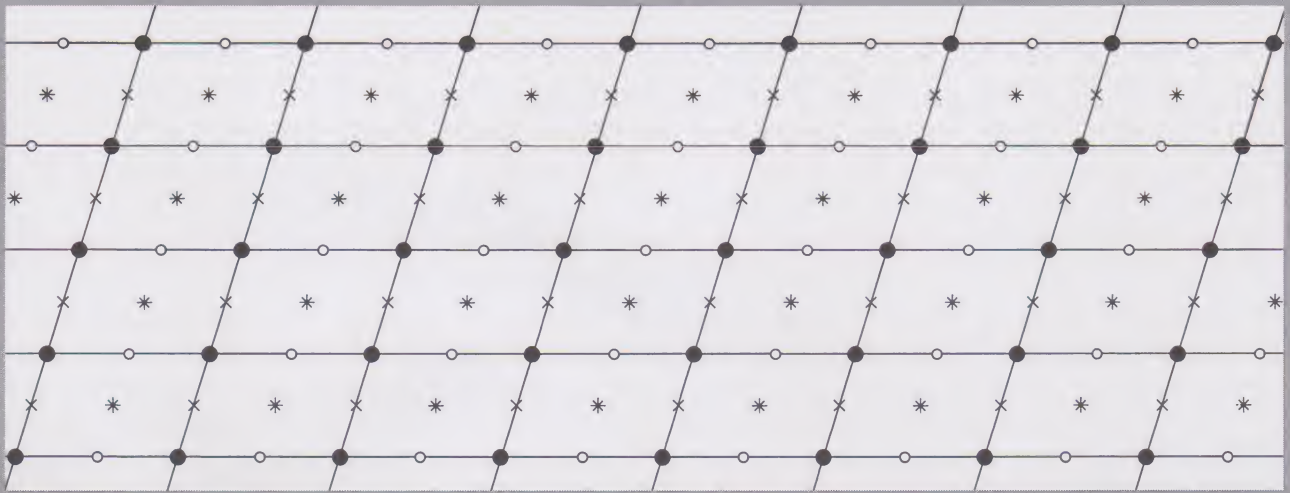
M336 FRIEZE CARD **SIDE 1 OVERLAY**



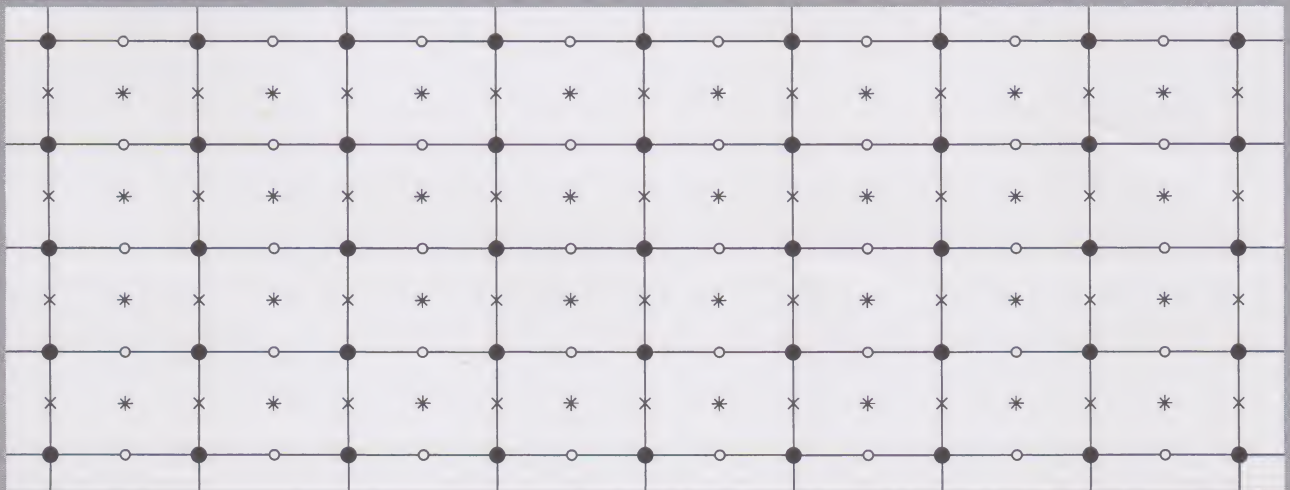
M336 FRIEZE CARD **SIDE 2 OVERLAY**



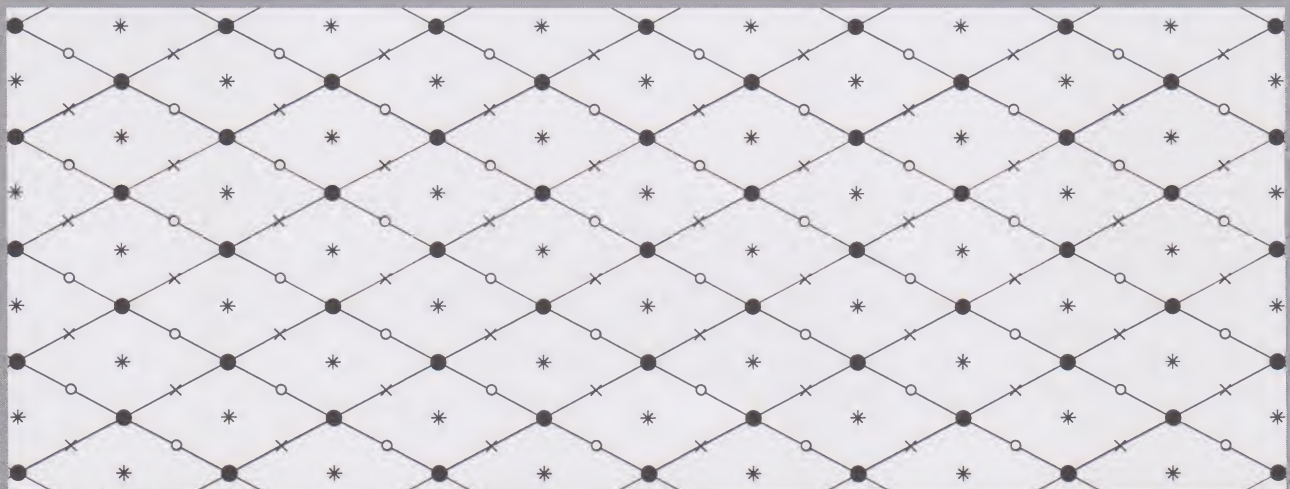
M336 LATTICE CARD SIDE 1



Parallelogram lattice

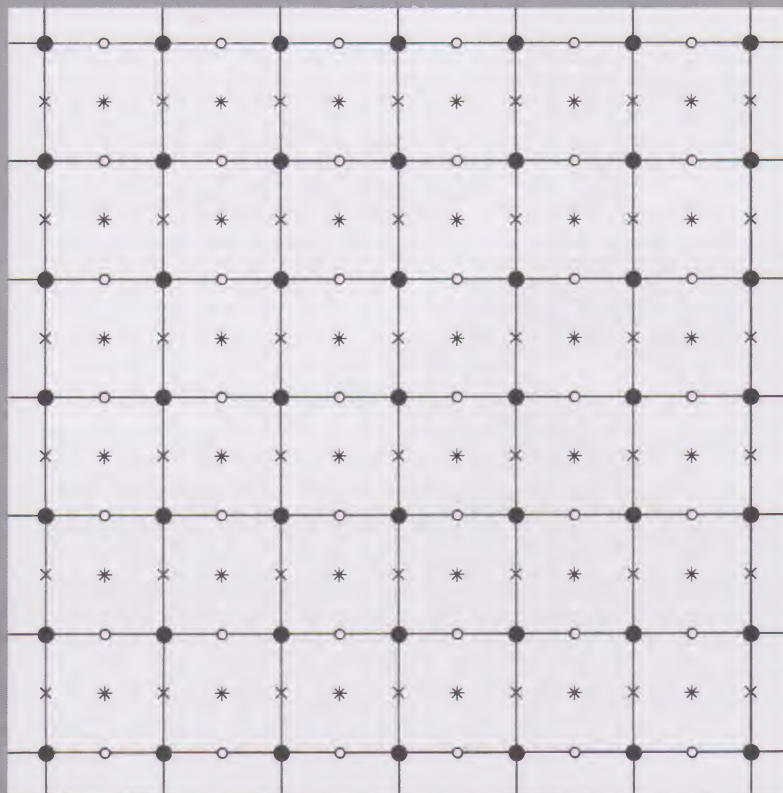


Rectangular lattice

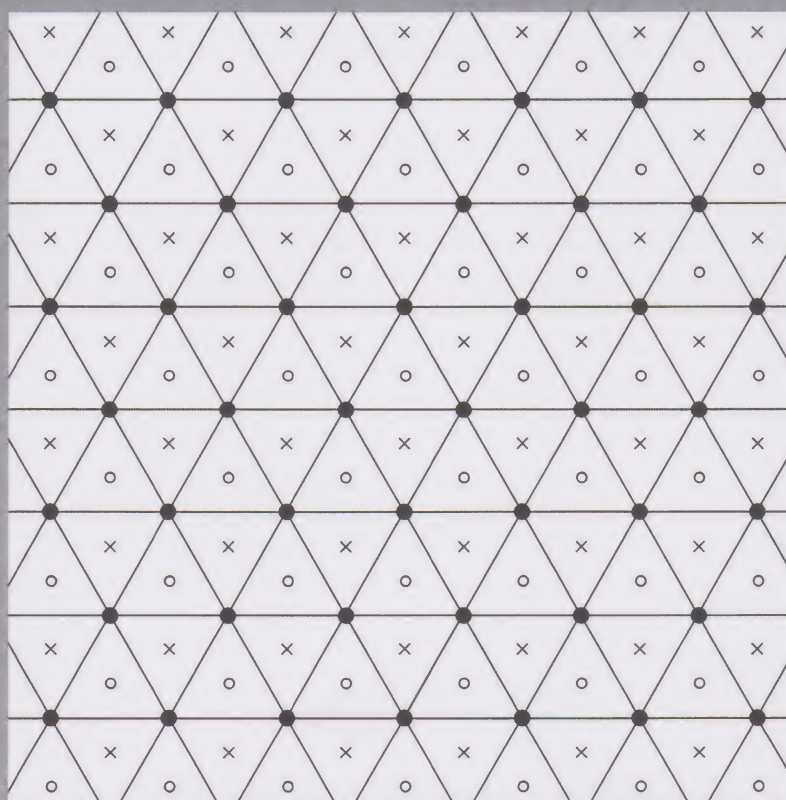


Rhombic lattice

M336 LATTICE CARD SIDE 2

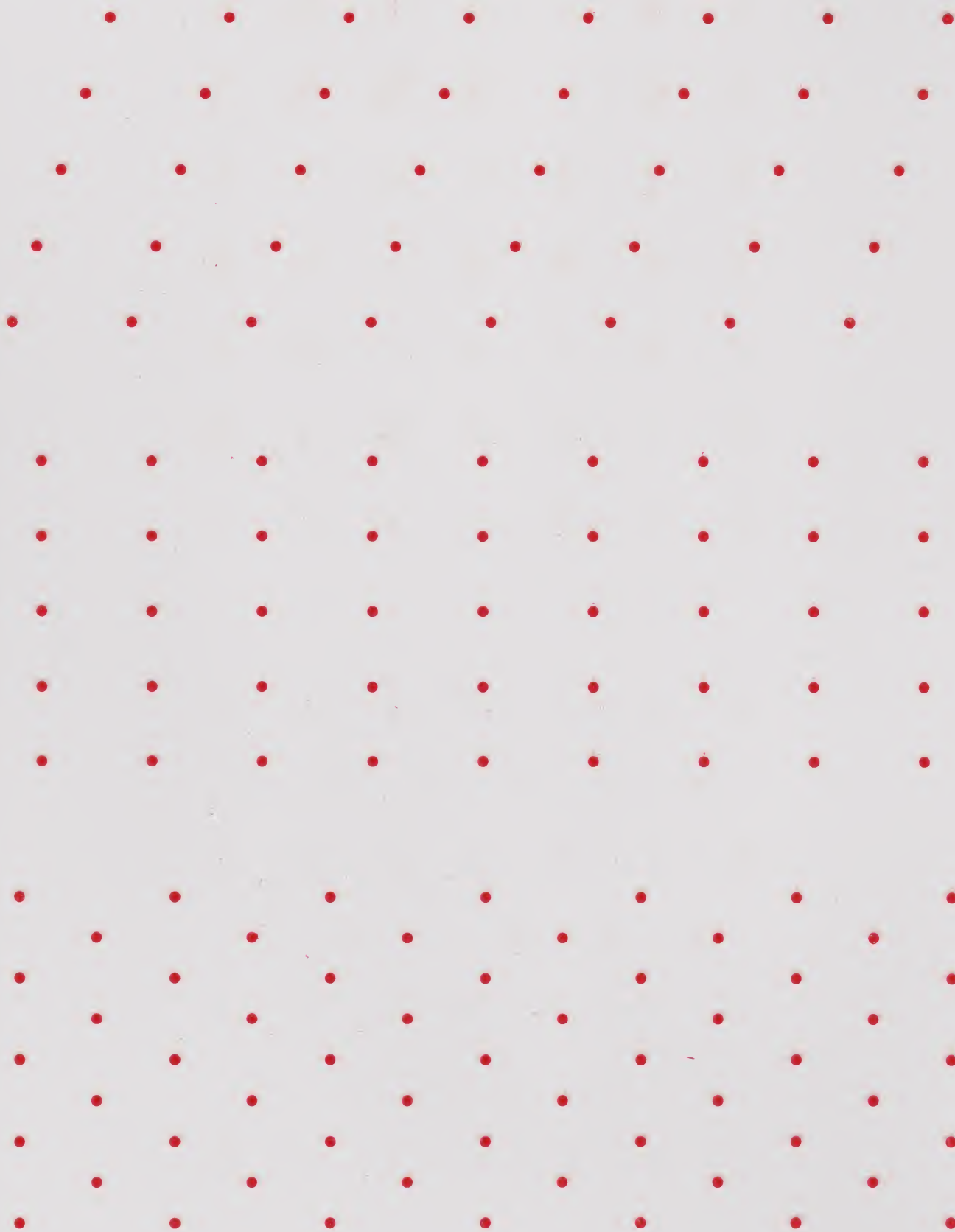


Square lattice

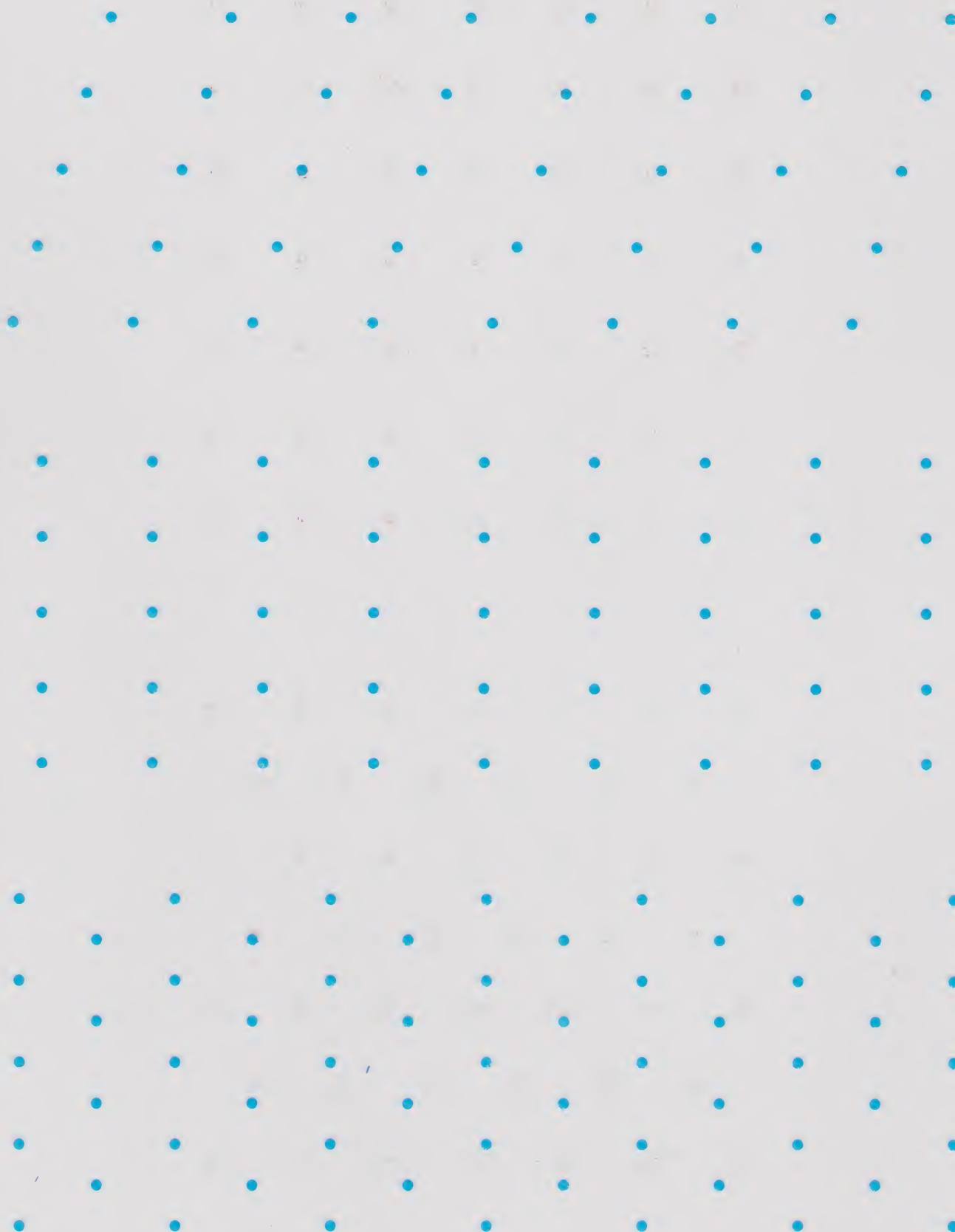


Hexagonal lattice

M336 LATTICE CARD SIDE 1 OVERLAY 1



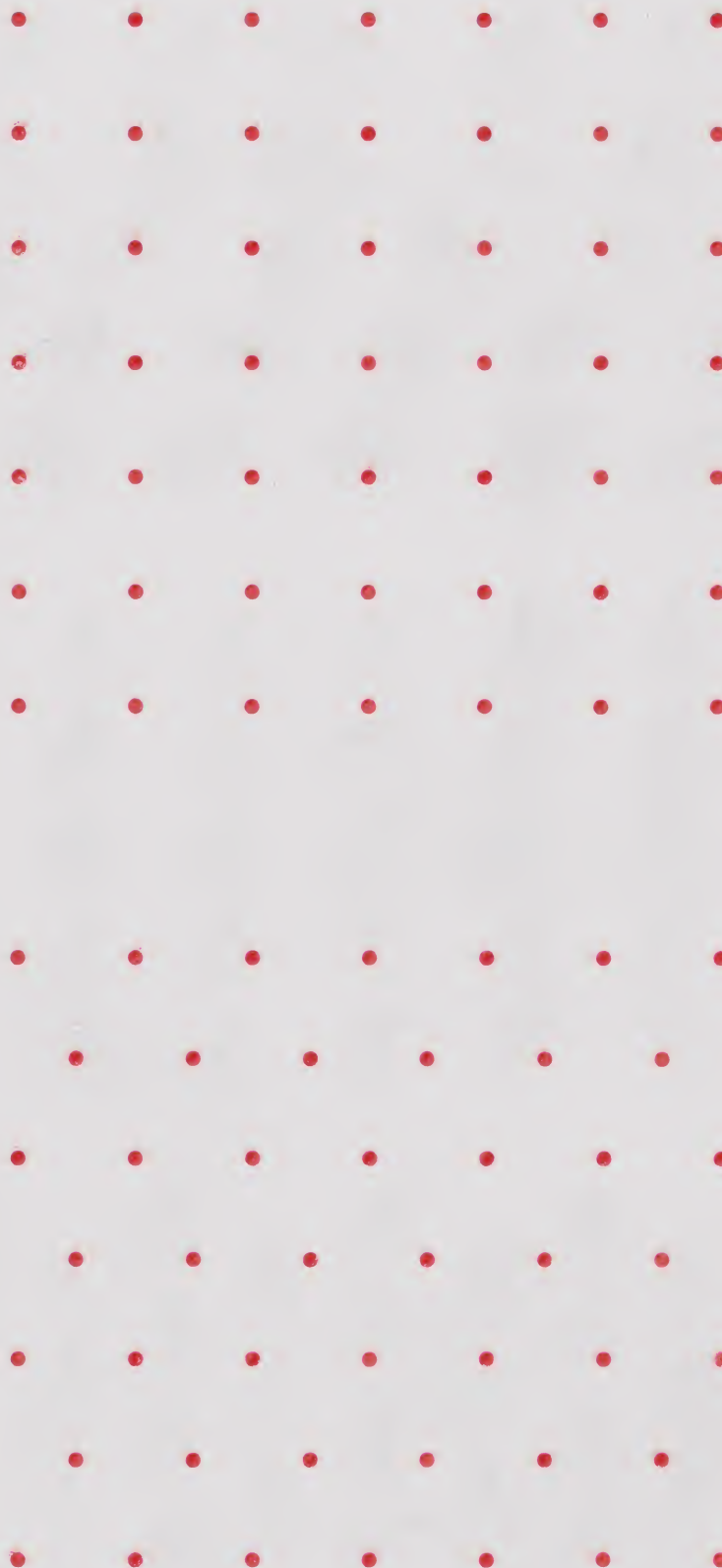
M336 LATTICE CARD SIDE 1 OVERLAY 2



M336 LATTICE CARD SIDE 1 OVERLAY 3



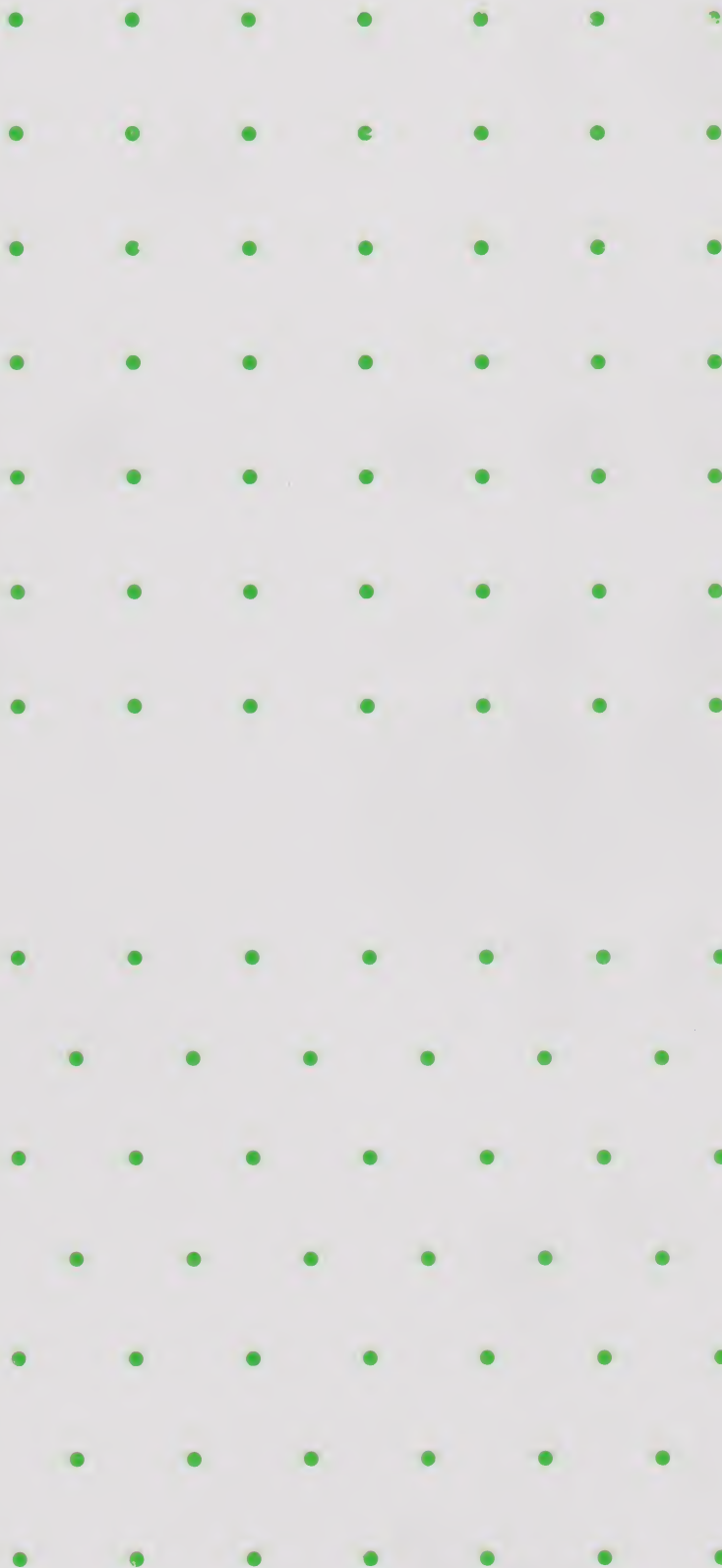
M336 LATTICE CARD SIDE 2 OVERLAY 1

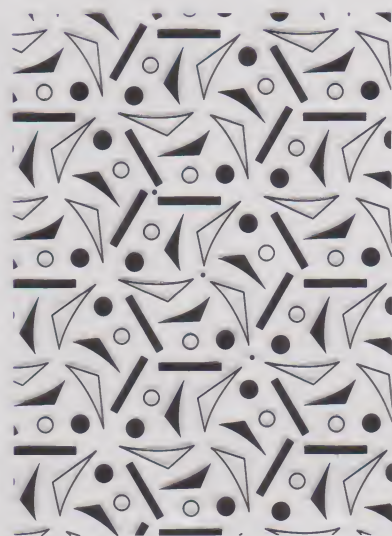


M336 LATTICE CARD SIDE 2 OVERLAY 2

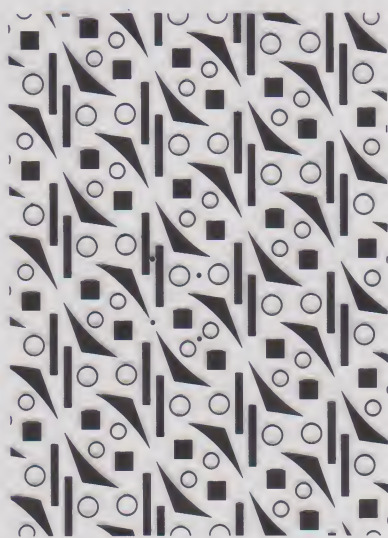


M336 LATTICE CARD SIDE 2 OVERLAY 3





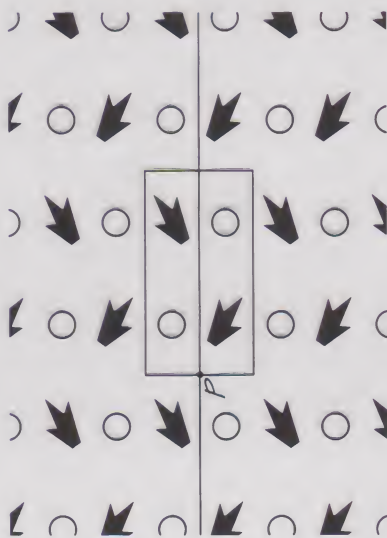
OVERLAY 2.1



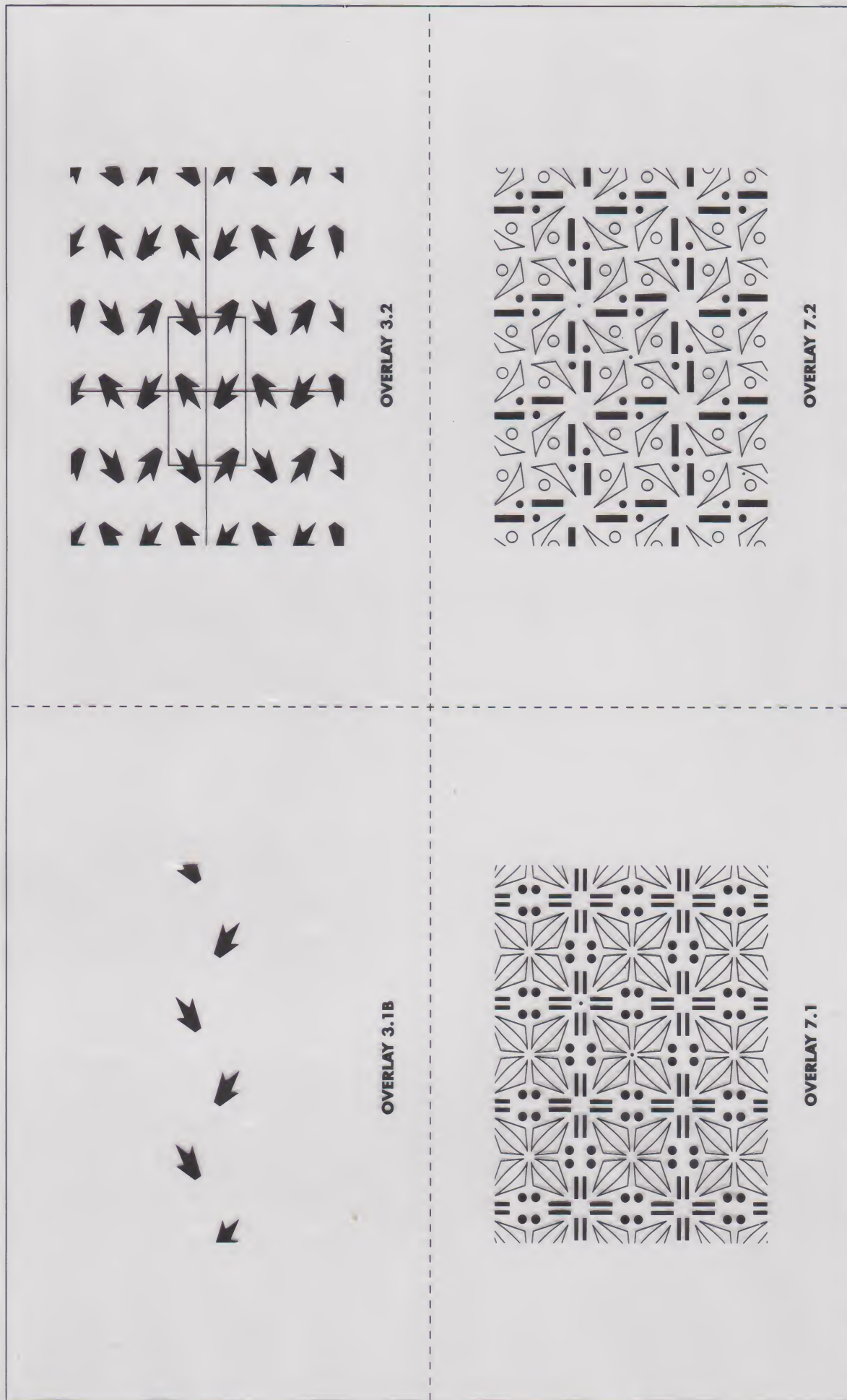
OVERLAY 2.2

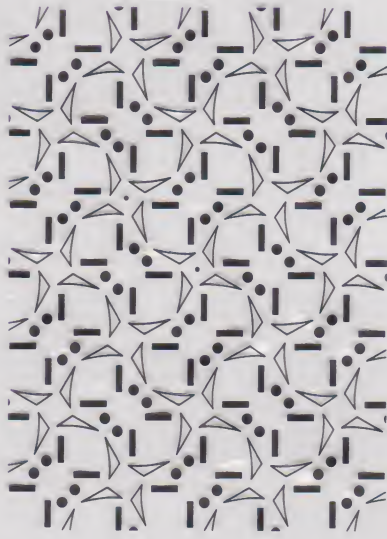


OVERLAY 2.3

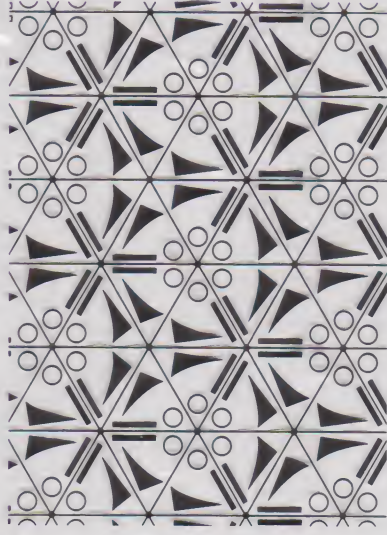


OVERLAY 3.1A

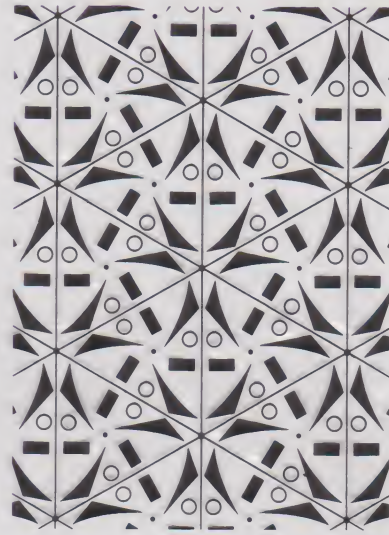




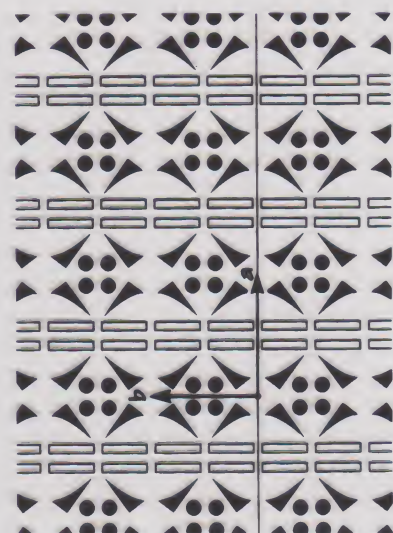
OVERLAY 7.3



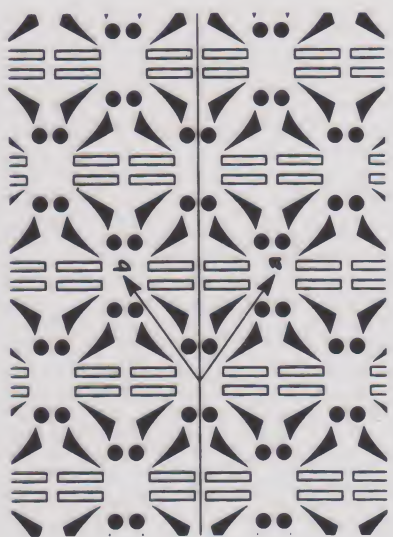
OVERLAY 9.2



OVERLAY 9.3



OVERLAY 13.2



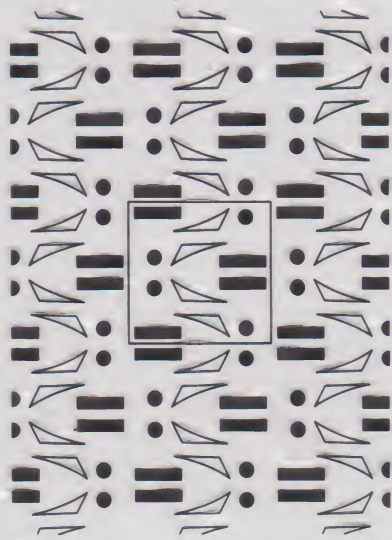
OVERLAY 13.3



OVERLAY 16



OVERLAY 17



OVERLAY 18



OVERLAY 19



OVERLAY 20



OVERLAY 21

M336 ISOMETRY TOOLKIT

Composites

$$t[p] t[q] = t[p + q]. \quad (1)$$

$$r[\theta] r[\phi] = r[\theta + \phi]. \quad (2)$$

$$q[\theta] q[\phi] = r[2(\theta - \phi)]. \quad (3)$$

$$r[\theta] q[\phi] = q[\phi + \frac{1}{2}\theta]. \quad (4)$$

$$q[\phi] r[\theta] = q[\phi - \frac{1}{2}\theta]. \quad (5)$$

If f is any isometry fixing the origin,

$$f t[p] = t[f(p)] f; \quad (6)$$

that is,

$$r[\theta] t[p] = t[r[\theta](p)] r[\theta], \quad (6a)$$

$$q[\theta] t[p] = t[q[\theta](p)] q[\theta]. \quad (6b)$$

$$r[c, \theta] = t[c] r[\theta] t[-c] \quad (7)$$

$$= t[d] r[\theta], \quad \text{where } d = c - r[\theta](c). \quad (\text{Figure A}) \quad (8)$$

In particular,

$$r[c, \pi] = t[2c] r[\pi]. \quad (\text{Figure B}) \quad (9)$$

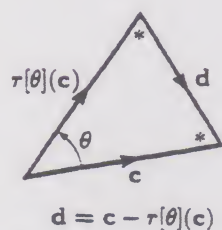


Figure A

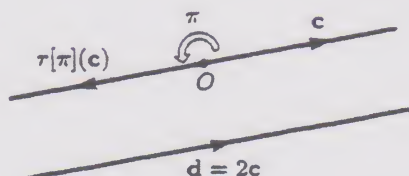


Figure B

$$q[c, \theta] = t[c] q[\theta] t[-c] \quad (10)$$

$$= t[d] q[\theta], \quad \text{where } d = c - q[\theta](c). \quad (\text{Figure C}) \quad (11)$$

In particular, when c is perpendicular to the reflection axis,

$$q[c, \theta] = t[2c] q[\theta]. \quad (\text{Figure D}) \quad (12)$$

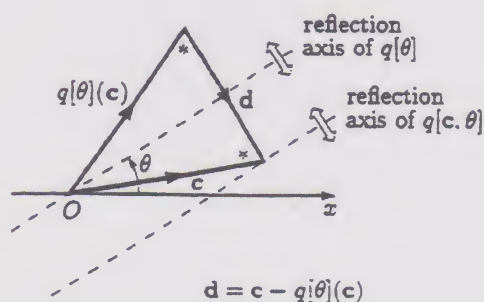


Figure C

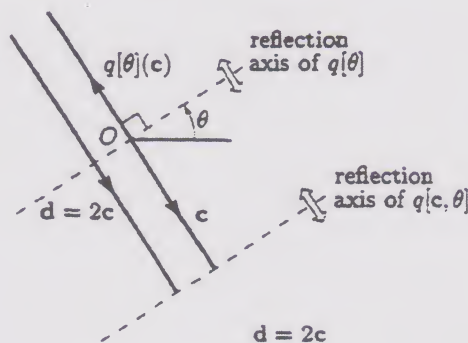


Figure D

$$q[g, c, \theta] = t[g + c] q[\theta] t[-c] \quad (13)$$

$$= t[d] q[\theta], \quad \text{where } d = g + c - q[\theta](c). \quad (14)$$

In particular, when c is perpendicular to the reflection axis,

$$q[g, c, \theta] = t[g + 2c] q[\theta]. \quad (15)$$

Inverses

$$(t[p])^{-1} = t[-p]. \quad (16)$$

$$(r[\theta])^{-1} = r[-\theta] = r[2\pi - \theta]. \quad (17)$$

$$(q[\theta])^{-1} = q[\theta]. \quad (18)$$

$$(r[c, \theta])^{-1} = r[c, -\theta] = r[c, 2\pi - \theta]. \quad (19)$$

$$(q[c, \theta])^{-1} = q[c, \theta]. \quad (20)$$

$$(q[g, c, \theta])^{-1} = q[-g, c, \theta]. \quad (21)$$

Conversion to explicit form

Let $p = (u, v)$.

To convert $t[p] r[\theta]$ to explicit form, use

$$t[p] r[\theta] : (x, y) \mapsto (x \cos \theta - y \sin \theta + u, x \sin \theta + y \cos \theta + v), \quad (22)$$

or alternatively

$$t[p] r[\theta] : \begin{bmatrix} x \\ y \end{bmatrix} \mapsto \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} + \begin{bmatrix} u \\ v \end{bmatrix}. \quad (22a)$$

To convert $t[p] q[\theta]$ to explicit form, use

$$t[p] q[\theta] : (x, y) \mapsto (x \cos 2\theta + y \sin 2\theta + u, x \sin 2\theta - y \cos 2\theta + v), \quad (23)$$

or alternatively

$$t[p] q[\theta] : \begin{bmatrix} x \\ y \end{bmatrix} \mapsto \begin{bmatrix} \cos 2\theta & \sin 2\theta \\ \sin 2\theta & -\cos 2\theta \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} + \begin{bmatrix} u \\ v \end{bmatrix}. \quad (23a)$$

To convert $r[c, \theta]$ to explicit form, use Equation 8 then Equation 22.

To convert $q[c, \theta]$ to explicit form, use Equation 11 then Equation 23.

To convert $q[g, c, \theta]$ to explicit form, use Equation 14 then Equation 23.